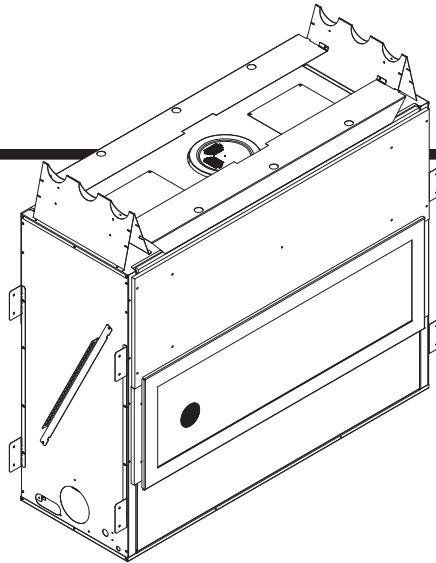


Models:
RED40
RED40ST



NOTICE



DO NOT DISCARD THIS MANUAL

- Important operating and maintenance instructions included.
- Read, understand and follow these instructions for safe installation and operation.
- Leave this manual with party responsible for use and operation.



⚠ WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury, or death.

- **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **What to do if you smell gas**
 - **DO NOT** try to light any appliance.
 - **DO NOT** touch any electrical switch. **DO NOT** use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

This appliance may be installed as an OEM installation in manufactured home (USA only) or mobile home and must be installed in accordance with the manufacturer's instructions and the manufactured home construction and safety standard, *Title 24 CFR, Part 3280* or *Standard for Installation in Mobile Homes, CAN/CSA Z240MH*, in Canada.

This appliance is only for use with the type(s) of gas indicated on the rating plate.

⚠ WARNING



HOT SURFACES!

Glass and other surfaces are hot during operation AND cool down.

Hot glass will cause burns.

- **DO NOT** touch glass until it is cooled
 - NEVER allow children to touch glass
 - Keep children away
 - CAREFULLY SUPERVISE children in same room as fireplace.
 - Alert children and adults to hazards of high temperatures.
- High temperatures may ignite clothing or other flammable materials.**
- Keep clothing, furniture, draperies and other flammable materials away.

This appliance has been supplied with an integral barrier to prevent direct contact with the fixed glass panel. DO NOT operate the appliance with the barrier removed.

Contact your dealer or Hearth & Home Technologies if the barrier is not present or help is needed to properly install one.

In the Commonwealth of Massachusetts installation must be performed by a licensed plumber or gas fitter.

See Table of Contents for location of additional Commonwealth of Massachusetts requirements.



Installation and service of this appliance should be performed by qualified personnel. Hearth & Home Technologies suggests NFI certified or factory trained professionals, or technicians supervised by an NFI certified professional.

Read this manual before installing or operating this appliance.
Please retain this owner's manual for future reference.

A. Congratulations

Congratulations on selecting a Heat & Glo gas fireplace, an elegant and clean alternative to wood burning fireplaces. The Heat & Glo gas fireplace you have selected is designed to provide the utmost in safety, reliability, and efficiency.

As the owner of a new fireplace, you'll want to read and carefully follow all of the instructions contained in this owner's manual. Pay special attention to all cautions and warnings.

This owner's manual should be retained for future reference. We suggest that you keep it with your other important documents and product manuals.

The information contained in this owner's manual, unless noted otherwise, applies to all models and gas control systems.

Your new Heat & Glo gas fireplace will give you years of durable use and trouble-free enjoyment. Welcome to the Heat & Glo family of fireplace products!

<h3>Homeowner Reference Information</h3> <p>Model Name: _____ Date purchased/installed: _____</p> <p>Serial Number: _____ Location on fireplace: _____</p> <p>Dealership purchased from: _____ Dealer Phone: _____</p> <p>Notes: _____</p> <p>_____</p>	<p><i>We recommend that you record the following pertinent information about your fireplace.</i></p>
---	--

Listing Label Information/Location

The model information regarding your specific fireplace can be found on the rating plate usually located in the control area of the fireplace.

Type of Gas →

Gas and Electric Information →

HEAT & GLO
No one builds a better fire

Heat & Glo, a brand of Hearth & Home Technologies, Inc.
7571 215th Street West, Lakeville, MN 55044

Not for use with solid fuel.
(Ne doit pas être utilisé avec un combustible solide).

Type of Gas (Sorte De Gaz): **NATURAL GAS**

This appliance must be installed in accordance with local codes, if any; if not, follow ANSI Z223.1 in the USA or CAN/CGA B149 installation codes. *(Installer l'appareil selon les codes ou règlements locaux ou, en l'absence de tels règlements, selon les codes d'installation CAN/CGA-B149.)*


ANSI Z21XX-XXXX · CSA 2.XX-MXX · UL307B

Minimum Permissible Gas Supply for Purposes of Input Adjustment.

Approved Minimum (De Gaz) Acceptable	0.0 in w.c.	(Po. Col. d'eau)
Maximum Pressure (Pression)	0.0 in w.c.	(Po. Col. d'eau)
Maximum Manifold Pressure (Pression)	0.0 in w.c.	(Po. Col. d'eau)
Minimum Manifold Pressure (Pression)	0.0 in w.c.	(Po. Col. d'eau)

Total Electrical Requirements: 000Vac, 00Hz., less than 00 Amperes

GAS-FIRED



ALTITUDE:	0-0000 FT.	IN CANADA	0000-0000FT.
MAX. INPUT BTUH:	00,000		00,000
MIN. INPUT BTUH:	00,000		00,000
ORIFICE SIZE:	#XXXXXX		#XXXXXX

Model: (Modele): **XXXXXXXXXX**

Serial (Serie): **XXXXXXXXXX**

Model Number →

Serial Number →

2

Heat & Glo • RED40, RED40ST • 2155-900 Rev. o • 7/12

▲ Safety Alert Key:

- **DANGER!** Indicates a hazardous situation which, if not avoided will result in death or serious injury.
- **WARNING!** Indicates a hazardous situation which, if not avoided could result in death or serious injury.
- **CAUTION!** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE:** Used to address practices not related to personal injury.

Table of Contents

A. Congratulations	2
B. Limited Lifetime Warranty	5

1 Listing and Code Approvals

A. Appliance Certification	7
B. Glass Specifications	7
C. BTU Specifications	7
D. High Altitude Installations	7
E. Non-Combustible Materials Specification	7
F. Combustible Materials Specification	7
G. Electrical Codes	7
H. Requirements for the Commonwealth of Massachusetts	8

User Guide

2 Operating Instructions

A. Gas Fireplace Safety	9
B. Your Fireplace	9
C. Clear Space	9
D. Decorative Doors and Fronts	10
E. Fixed Glass Assembly	10
F. Remote Controls, Wall Controls and Wall Switches	10
G. Before Lighting Fireplace	10
H. Lighting Instructions (IPI)	11
I. After Fireplace is Lit	12
J. Frequently Asked Questions	12

3 Maintenance and Service

A. Maintenance Tasks-Homeowner	13
B. Maintenance Tasks-Qualified Service Technician	14

Installer Guide

4 Getting Started

→ A. Typical Appliance System	15
B. Design and Installation Considerations	16
C. Tools and Supplies Needed	16
D. Inspect Appliance and Components	16

5 Framing and Clearances

A. Selecting Appliance Location	17
B. Constructing the Appliance Chase	19
C. Clearances	19
D. Mantel and Wall Projections	21

6 Termination Locations

→ A. Vent Termination Minimum Clearances	22
--	----

7 Vent Information and Diagrams

A. Approved Pipe	24
B. Vent Table Key	24
C. Use of Elbows	24
D. Measuring Standards	24
E. Vent Diagrams	24

8 Vent Clearances and Framing

A. Pipe Clearances to Combustibles	32
B. Wall Penetration Framing	32
C. Install the Ceiling Firestop	33
D. Install Attic Insulation Shield	34

9 Appliance Preparation

A. Appliance Preparation	35
B. Securing and Leveling the Appliance	36 ←
C. Active Convection Technology	37 ←

10 Installing Vent Pipe (DVP Pipe)

A. Assemble Vent Sections	38
B. Assemble Slip Sections	39
C. Secure The Vent Sections	39
D. Disassemble Vent Sections	40
E. Install Decorative Ceiling Components	40
F. Install Metal Roof Flashing	41
G. Assemble and Install Storm Collar	41
H. Install Vertical Termination Cap	42
I. Heat Shield Requirements for Horizontal Termination	42
J. Install Horizontal Termination Cap	43

11 Gas Information

A. Fuel Conversion	44
B. Gas Pressure	44
C. Gas Connection	45
D. High Altitude Installations	45

12 Electrical Information

A. Wiring Requirements	46
B. IntelliFire Ignition System Wiring	46
C. Optional Accessories Requirements	46 ←
D. Optional LED Lighting Circuit	48
E. Electrical Service and Repair	49
F. Junction Box Installation	49
G. Active Convection Blower Replacement	49

13 Finishing

A. Splatter Guard	52
B. Framing and Finishing Instructions	52
C. Mantel and Wall Projections	54
D. Facing Material	55
E. Mesh Fronts	58

14 Appliance Setup

A. Remove Fixed Glass Assembly	59
B. Remove the Shipping Materials	59
C. Clean the Appliance	59
D. Accessories	59
E. Rock Media Instructions	59
F. Porcelain Instructions	59
G. Granite Instructions	59
H. Fixed Glass Assembly	60
I. Install the Mesh	60
J. Air Shutter Setting	60

15 Troubleshooting

A. IntelliFire Ignition System	61
--	----

16 Reference Materials

A. Appliance Dimension Diagram	63
B. Vent Components Diagrams	65
→ C. Service Parts	70
D. Contact Information	82

→ = Contains updated information.

B. Limited Lifetime Warranty

Hearth & Home Technologies Inc. LIMITED LIFETIME WARRANTY

Hearth & Home Technologies Inc., on behalf of its hearth brands ("HHT"), extends the following warranty for HHT gas, wood, pellet, coal and electric hearth appliances that are purchased from an HHT authorized dealer.

WARRANTY COVERAGE:

HHT warrants to the original owner of the HHT appliance at the site of installation, and to any transferee taking ownership of the appliance at the site of installation within two years following the date of original purchase, that the HHT appliance will be free from defects in materials and workmanship at the time of manufacture. After installation, if covered components manufactured by HHT are found to be defective in materials or workmanship during the applicable warranty period, HHT will, at its option, repair or replace the covered components. HHT, at its own discretion, may fully discharge all of its obligations under such warranties by replacing the product itself or refunding the verified purchase price of the product itself. The maximum amount recoverable under this warranty is limited to the purchase price of the product. This warranty is subject to conditions, exclusions and limitations as described below.

WARRANTY PERIOD:

Warranty coverage begins on the date of original purchase. In the case of new home construction, warranty coverage begins on the date of first occupancy of the dwelling or six months after the sale of the product by an independent, authorized HHT dealer/ distributor, whichever occurs earlier. The warranty shall commence no later than 24 months following the date of product shipment from HHT, regardless of the installation or occupancy date. The warranty period for parts and labor for covered components is produced in the following table.

The term "Limited Lifetime" in the table below is defined as: 20 years from the beginning date of warranty coverage for gas appliances, and 10 years from the beginning date of warranty coverage for wood, pellet, and coal appliances. These time periods reflect the minimum expected useful lives of the designated components under normal operating conditions.

Warranty Period		HHT Manufactured Appliances and Venting							Components Covered
Parts	Labor	Gas	Wood	Pellet	EPA Wood	Coal	Electric	Venting	
1 Year		X	X	X	X	X	X	X	All parts and material except as covered by Conditions, Exclusions, and Limitations listed
2 years				X	X	X			Igniters, electronic components, and glass
		X	X	X	X	X			Factory-installed blowers
			X						Molded refractory panels
3 years				X					Firepots and burnpots
5 years	1 year			X	X				Castings and baffles
7 years	3 years		X	X	X				Manifold tubes, HHT chimney and termination
10 years	1 year	X							Burners, logs and refractory
Limited Lifetime	3 years	X	X	X	X	X			Firebox and heat exchanger
90 Days		X	X	X	X	X	X	X	All replacement parts beyond warranty period

See conditions, exclusions, and limitations on next page.

B. Limited Lifetime Warranty (*continued*)

WARRANTY CONDITIONS:

- This warranty only covers HHT appliances that are purchased through an HHT authorized dealer or distributor. A list of HHT authorized dealers is available on the HHT branded websites.
- This warranty is only valid while the HHT appliance remains at the site of original installation.
- Contact your installing dealer for warranty service. If the installing dealer is unable to provide necessary parts, contact the nearest HHT authorized dealer or supplier. Additional service fees may apply if you are seeking warranty service from a dealer other than the dealer from whom you originally purchased the product.
- Check with your dealer in advance for any costs to you when arranging a warranty call. Travel and shipping charges for parts are not covered by this warranty.

WARRANTY EXCLUSIONS:

This warranty does not cover the following:

- Changes in surface finishes as a result of normal use. As a heating appliance, some changes in color of interior and exterior surface finishes may occur. This is not a flaw and is not covered under warranty.
- Damage to printed, plated, or enameled surfaces caused by fingerprints, accidents, misuse, scratches, melted items, or other external sources and residues left on the plated surfaces from the use of abrasive cleaners or polishes.
- Repair or replacement of parts that are subject to normal wear and tear during the warranty period. These parts include: paint, wood, pellet and coal gaskets, firebricks, grates, flame guides, light bulbs, batteries and the discoloration of glass.
- Minor expansion, contraction, or movement of certain parts causing noise. These conditions are normal and complaints related to this noise are not covered by this warranty.
- Damages resulting from: (1) failure to install, operate, or maintain the appliance in accordance with the installation instructions, operating instructions, and listing agent identification label furnished with the appliance; (2) failure to install the appliance in accordance with local building codes; (3) shipping or improper handling; (4) improper operation, abuse, misuse, continued operation with damaged, corroded or failed components, accident, or improperly/incorrectly performed repairs; (5) environmental conditions, inadequate ventilation, negative pressure, or drafting caused by tightly sealed constructions, insufficient make-up air supply, or handling devices such as exhaust fans or forced air furnaces or other such causes; (6) use of fuels other than those specified in the operating instructions; (7) installation or use of components not supplied with the appliance or any other components not expressly authorized and approved by HHT; (8) modification of the appliance not expressly authorized and approved by HHT in writing; and/or (9) interruptions or fluctuations of electrical power supply to the appliance.
- Non-HHT venting components, hearth components or other accessories used in conjunction with the appliance.
- Any part of a pre-existing fireplace system in which an insert or a decorative gas appliance is installed.
- HHT's obligation under this warranty does not extend to the appliance's capability to heat the desired space. Information is provided to assist the consumer and the dealer in selecting the proper appliance for the application. Consideration must be given to appliance location and configuration, environmental conditions, insulation and air tightness of the structure.

This warranty is void if:

- The appliance has been over-fired or operated in atmospheres contaminated by chlorine, fluorine, or other damaging chemicals. Over-firing can be identified by, but not limited to, warped plates or tubes, rust colored cast iron, bubbling, cracking and discoloration of steel or enamel finishes.
- The appliance is subjected to prolonged periods of dampness or condensation.
- There is any damage to the appliance or other components due to water or weather damage which is the result of, but not limited to, improper chimney or venting installation.

LIMITATIONS OF LIABILITY:

- The owner's exclusive remedy and HHT's sole obligation under this warranty, under any other warranty, express or implied, or in contract, tort or otherwise, shall be limited to replacement, repair, or refund, as specified above. In no event will HHT be liable for any incidental or consequential damages caused by defects in the appliance. Some states do not allow exclusions or limitation of incidental or consequential damages, so these limitations may not apply to you. This warranty gives you specific rights; you may also have other rights, which vary from state to state. EXCEPT TO THE EXTENT PROVIDED BY LAW, HHT MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE.

1 Listing and Code Approvals

A. Appliance Certification

MODEL: RED40, RED40ST
LABORATORY: Underwriters Laboratories, Inc. (UL)
TYPE: Vented Gas Fireplace Heater
STANDARD: ANSI Z21.88b-2008 CSA 2.33a-2008
Vented Gas Fireplace Heaters

This product is listed to ANSI standards for “Vented Gas Fireplace Heaters” and applicable sections of “Gas Burning Heating Appliances for Manufactured Homes and Recreational Vehicles”, and “Gas Fired Appliances for Use at High Altitudes”.

NOTICE: *This installation must conform with local codes. In the absence of local codes you must comply with the National Fuel Gas Code, ANSI Z223.1-latest edition in the U.S.A. and the CAN/CGA B149 Installation Codes in Canada.*

NOT INTENDED FOR USE AS A PRIMARY HEAT SOURCE.
 This appliance is tested and approved as either supplemental room heat or as a decorative appliance. It should not be factored as primary heat in residential heating calculations.

B. Glass Specifications

This appliance is equipped with 5 mm ceramic glass. Replace glass only with 5 mm ceramic glass. Please contact your dealer for replacement glass.

C. BTU Specifications

Models <i>(U.S. or Canada)</i>		Maximum Input BTU/h	Minimum Input BTU/h	Orifice Size (DMS)
RED40 RED40ST (NG)	US <i>(0-2000 FT)</i>	34,000	24,000	#34
	CANADA <i>(2000-4500 FT)</i>	29,500	22,000	#36
RED40 RED40ST (LP)	US <i>(0-2000 FT)</i>	34,000	25,000	#50
	CANADA <i>(2000-4500 FT)</i>	31,500	23,000	#51

D. High Altitude Installations

NOTICE: *If the heating value of the gas has been reduced, these rules do not apply. Check with your local gas utility or authorities having jurisdiction.*

When installing above 2000 feet elevation:

- In the USA: Reduce input rate 4% for each 1000 feet above 2000 feet.
- In CANADA: Reduce input rate 10% for elevations between 2000 feet and 4500 feet. Above 4500 feet, consult local gas utility.

Check with your local gas utility to determine proper orifice size.

E. Non-Combustible Materials Specification

Material which will not ignite and burn. Such materials are those consisting entirely of steel, iron, brick, tile, concrete, slate, glass or plasters, or any combination thereof.

Materials that are reported as passing **ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 °C** and **UL763** shall be considered non-combustible materials.

F. Combustible Materials Specification

Materials made of or surfaced with wood, compressed paper, plant fibers, plastics, or other material that can ignite and burn, whether flame proofed or not, or plastered or unplastered shall be considered combustible materials.

G. Electrical Codes

NOTICE: *This appliance must be electrically wired and grounded in accordance with local codes or, in the absence of local codes, with National Electric Code ANSI/NFPA 70-latest edition or the Canadian Electric Code CSA C22.1.*

- A 110-120 VAC circuit for this product must be protected with ground-fault circuit-interrupter protection, in compliance with the applicable electrical codes, when it is installed in locations such as in bathrooms or near sinks.

Note: The following requirements reference various Massachusetts and national codes not contained in this document.

H. Requirements for the Commonwealth of Massachusetts

For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

Installation of Carbon Monoxide Detectors

At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gas fitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gas fitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors.

In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.

In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.

Approved Carbon Monoxide Detectors

Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and IAS certified.

Signage

A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) in. in size, "**GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS**".

Inspection

The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a)1 through 4.

Exemptions

The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:

- The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the Board; and
- Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.

MANUFACTURER REQUIREMENTS

Gas Equipment Venting System Provided

When the manufacturer of Product Approved side wall horizontally vented gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for installation of the equipment and the venting system shall include:

- Detailed instructions for the installation of the venting system design or the venting system components; and
- A complete parts list for the venting system design or venting system.

Gas Equipment Venting System NOT Provided

When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies "special venting systems", the following requirements shall be satisfied by the manufacturer:


- The referenced "special venting system" instructions shall be included with the appliance or equipment installation instructions; and
- The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

See Gas Connection section for additional Commonwealth of Massachusetts requirements.

A. Gas Fireplace Safety

⚠ WARNING



HOT SURFACES!
Glass and other surfaces are hot during operation AND cool down.

Hot glass will cause burns.

- **DO NOT** touch glass until it is cooled
- **NEVER** allow children to touch glass
- Keep children away

- CAREFULLY SUPERVISE children in same room as fireplace.
- Alert children and adults to hazards of high temperatures.

High temperatures may ignite clothing or other flammable materials.

- Keep clothing, furniture, draperies and other flammable materials away.

This appliance has been supplied with an integral barrier to prevent direct contact with the fixed glass panel. DO NOT operate the appliance with the barrier removed.

Contact your dealer or Hearth & Home Technologies if the barrier is not present or help is needed to properly install one.

WARNING! Choking Hazard! Keep rock media out of reach of children.

If you expect that small children or vulnerable adults may come into contact with this fireplace, the following precautions are recommended:

- Install a physical barrier such as:
 - A decorative firescreen.
 - Adjustable safety gate.

- Install a switch lock or a wall/remote control with child protection lockout feature.
- Keep remote controls out of reach of children.
- Never leave children alone near a hot fireplace, whether operating or cooling down.
- Teach children to NEVER touch the fireplace.
- Consider not using the fireplace when children will be present.

Contact your dealer for more information, or visit: www.hpba.org/safety-information.

To prevent unintended operation when not using your fireplace for an extended period of time (summer months, vacations, trips, etc):

- Remove batteries from remote controls.
- Turn off wall controls.
- Unplug 3 volt adapter plug.

B. Your Fireplace

WARNING! DO NOT operate fireplace before reading and understanding operating instructions. Failure to operate fireplace according to operating instructions could cause fire or injury.

C. Clear Space

WARNING! DO NOT place combustible objects in front of the fireplace. High temperatures may start a fire. See Figure 2.1.

Avoid placing candles and other heat-sensitive objects on mantel or hearth. Heat may damage these objects.

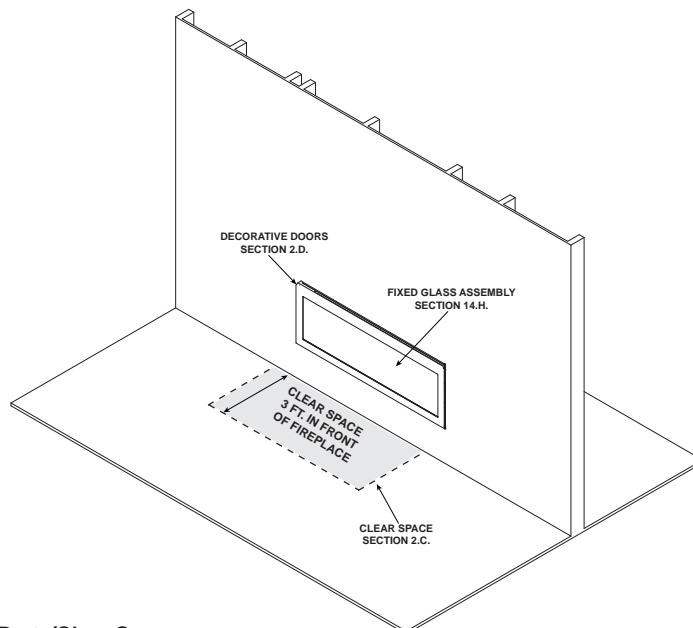


Figure 2.1 General Operating Parts/Clear Space.

D. Decorative Doors and Fronts

WARNING! Risk of Fire! Install *ONLY* doors or fronts approved by Hearth & Home Technologies. Unapproved doors or fronts may cause fireplace to overheat.

This appliance has been supplied with an integral barrier to prevent direct contact with the fixed glass panel. DO NOT operate the fireplace with the barrier removed.

Contact your dealer or Hearth & Home Technologies if the barrier is not present or help is needed to properly install one.

For more information refer to the instructions supplied with your decorative door or front.

E. Fixed Glass Assembly

See Section 14.H.

F. Remote Controls, Wall Controls and Wall Switches

Follow the instructions supplied with the control installed to operate your fireplace:

For safety:

- Install a switch lock or a wall/remote control with child protection lockout feature.
- Keep remote controls out of reach of children.

See your dealer if you have questions.

G. Before Lighting Fireplace

Before operating this fireplace for the first time, **have a qualified service technician:**

- Verify all shipping materials have been removed from inside and/or underneath the firebox.
- Review proper placement of media, refractory kits and/or other decorative materials.
- Check the wiring.
- Check the air shutter adjustment.
- Ensure that there are no gas leaks.
- Ensure that the glass is sealed and in the proper position and that the integral barrier is in place.

WARNING! Risk of Fire or Asphyxiation! DO NOT operate fireplace with fixed glass assembly removed.

H. Lighting Instructions (IPI)

FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A.** This appliance is equipped with an intermittent pilot ignition (IPI) device which automatically lights the burner. **DO NOT** try to light the burner by hand.
- B. BEFORE LIGHTING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- **DO NOT** try to light any appliance.
 - **DO NOT** touch any electric switch; do not use any phone in your building.
- C. DO NOT** use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.

WARNING:

DO NOT CONNECT LINE VOLTAGE (110/120 VAC OR 220/240 VAC) TO THE CONTROL VALVE.

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to the owner's information manual provided with this appliance.

This appliance needs fresh air for safe operation and must be installed so there are provisions for adequate combustion and ventilation air.

If not installed, operated, and maintained in accordance with the manufacturer's instructions, this product could expose you to substances in fuel or fuel combustion which are known to the State of California to cause cancer, birth defects, or other reproductive harm.

Keep burner and control compartment clean. See installation and operating instructions accompanying appliance.

For additional information on operating your
Hearth & Home Technologies fireplace, please refer to www.fireplaces.com.

CAUTION:

Hot while in operation. **DO NOT** touch. Keep children, clothing, furniture, gas-line and other liquids having flammable vapors away.

DO NOT operate the appliance with fixed glass assembly removed, cracked or broken. Replacement of the fixed glass assembly should be done by a licensed or qualified service person.

NOT FOR USE WITH SOLID FUEL

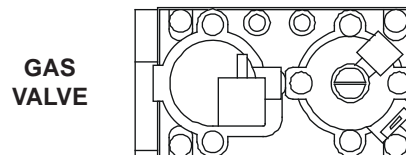
For use with natural gas and propane. A conversion kit, as supplied by the manufacturer, shall be used to convert this appliance to the alternate fuel.

Also Certified for Installation in a Bedroom or a Bedsitting Room.

For assistance or additional information, consult a qualified installer, service agency or the gas supplier.

LIGHTING INSTRUCTIONS (IPI)

1. This appliance is equipped with an ignition device which automatically lights the burner. **DO NOT** try to light the burner by hand.



2. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, **STOP!** Follow "B" in the Safety Information located on the left side of this label. If you do not smell gas, go to next step.
3. To light the burner:
Equipped with wall switch: Turn ON/OFF switch to ON.
Equipped with remote or wall control: Press ON or FLAME button.
Equipped with thermostat: Set temperature to desired setting.
4. If the appliance does not light after three tries, call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. Equipped with wall switch: Turn ON/OFF switch to OFF.
Equipped with remote or wall control: Press OFF button.
Equipped with thermostat: Set temperature to lowest setting.
2. Service technician should turn off electric power to the control when performing service.

593-913G

Final inspection by _____

I. After Fireplace is Lit

Initial Break-in Procedure

- The fireplace should be run three to four hours continuously on high.
- Turn the fireplace off and allow it to completely cool.
- Remove fixed glass assembly. See Section 14.H.
- Clean fixed glass assembly. See Section 3.
- Replace the fixed glass assembly and run continuously on high an additional 12 hours.

This cures the materials used to manufacture the fireplace.

NOTICE! Open windows for air circulation during fireplace break-in.

- *Some people may be sensitive to smoke and odors.*
- *Smoke detectors may activate.*

J. Frequently Asked Questions

ISSUE	SOLUTIONS
Condensation on the glass	This is a result of gas combustion and temperature variations. As the fireplace warms, this condensation will disappear.
Blue flames	This is a result of normal operation and the flames will begin to yellow as the fireplace is allowed to burn for 20 to 40 minutes.
Odor from fireplace	When first operated, this fireplace may release an odor for the first several hours. This is caused by the curing of materials from manufacturing. Odor may also be released from finishing materials and adhesives used near the fireplace. These circumstances may require additional curing related to the installation environment.
Film on the glass	This is a normal result of the curing process of the paint. Glass should be cleaned within 3 to 4 hours of initial burning. A non-abrasive cleaner such as gas appliance glass cleaner may be necessary. See your dealer.
Metallic noise	Noise is caused by metal expanding and contracting as it heats up and cools down, similar to the sound produced by a furnace or heating duct. This noise does not affect the operation or longevity of the fireplace.
Rock noise	There may be some "cracking" noise coming from the fireplace during the first few heating and cooling cycles. This noise is associated with settling rock and some minor cracking of larger pieces of rock. This will lessen over time as the glass rock is conditioned to the heating and cooling temperature changes.
Rocks falling through basepan	It is expected that a few small pieces of rock may fall through the basepan and come to rest on the fireplace bottom. This has no affect on fireplace performance.
Wall above appliance feels hot to the touch.	No action necessary. This appliance ships with a non-combustible material attached. Specifications of the attached non-combustible material are listed in Section 1.E.

3 Maintenance and Service

Any safety screen or guard removed for servicing must be replaced prior to operating the fireplace.

When properly maintained, your fireplace will give you many years of trouble-free service. We recommend annual service by a qualified service technician.

A. Maintenance Tasks-Homeowner

Installation and repair should be done by a qualified service technician only. The fireplace should be inspected before use and at least annually by a professional service person.

The following tasks may be performed annually by the homeowner. If you are uncomfortable performing any of the listed tasks, please call your dealer for a service appointment.

More frequent cleaning may be required due to lint from carpeting or other factors. Control compartment, burner and circulating air passageway of the fireplace must be kept clean.

CAUTION! Risk of Burns! *The fireplace should be turned off and cooled before servicing.*

Glass Cleaning

Frequency: Seasonally

By: Homeowner

Tools Needed: Protective gloves, glass cleaner, drop cloth and a stable work surface.

CAUTION! Handle fixed glass assembly with care. *Glass is breakable.*

- Avoid striking, scratching or slamming glass
- Avoid abrasive cleaners
- **DO NOT** clean glass while it is hot
- Prepare a work area large enough to accommodate fixed glass assembly and door frame by placing a drop cloth on a flat, stable surface.

Note: Fixed glass assembly and gasketing may have residue that can stain carpeting or floor surfaces.

- Remove door or decorative front from fireplace and set aside on work surface.
- See Section 14.H for instructions to remove fixed glass assembly.
- Clean glass with a non-abrasive commercially available cleaner.
 - Light deposits: Use a soft cloth with soap and water
 - Heavy deposits: Use commercial fireplace glass cleaner (consult with your dealer)
- Refer to Section 14.H for glass removal and replacement instructions.
- Reinstall door or decorative front.

Doors, Surrounds, Fronts

Frequency: Annually

By: Homeowner

Tools needed: Protective gloves, stable work surface

- Assess condition of screen and replace as necessary.
- Inspect for scratches, dents or other damage and repair as necessary.
- Check that louvers are not blocked.
- Vacuum and dust surfaces.

Remote Control

Frequency: Seasonally

By: Homeowner

Tools needed: Replacement batteries and remote control instructions.

- Locate remote control transmitter and receiver.
- Verify operation of remote. Refer to remote control operation instructions for proper calibration and setup procedure.
- Place batteries as needed in remote transmitters and battery-powered receivers.
- Place remote control out of reach of children.

If not using your fireplace for an extended period of time (summer months, vacations/trips, etc), to prevent unintended operation:

- Remove batteries from remote controls.
- Unplug 3 volt adapter plug on IPI models.
- Verify that the sensor rod does not contact the burner.

Venting

Frequency: Seasonally

By: Homeowner

Tools needed: Protective gloves and safety glasses.

- Inspect venting and termination cap for blockage or obstruction such plants, bird nests, leaves, snow, debris, etc.
- Verify termination cap clearance to subsequent construction (building additions, decks, fences, or sheds). See Section 6.
- Inspect for corrosion or separation.
- Verify weather stripping, sealing and flashing remains intact.
- Inspect draft shield to verify it is not damaged or missing.

B. Maintenance Tasks-Qualified Service Technician

The following tasks must be performed by a qualified service technician.

Gasket Seal and Glass Assembly Inspection

Frequency: Annually

By: Qualified Service Technician

Tools needed: Protective gloves, drop cloth and a stable work surface.

- Inspect gasket seal and its condition.
- Inspect fixed glass assembly for scratches and nicks that can lead to breakage when exposed to heat.
- Confirm there is no damage to glass or glass frame. Replace as necessary.
- Verify that fixed glass assembly is properly retained and attachment components are intact and not damaged. Replace as necessary.

Firebox

Frequency: Annually

By: Qualified Service Technician

Tools needed: Protective gloves, sandpaper, steel wool, cloths, mineral spirits, primer and touch-up paint.

- Inspect for paint condition, warped surfaces, corrosion or perforation. Sand and repaint as necessary.
- Replace fireplace if firebox has been perforated.

Control Compartment and Firebox Top

Frequency: Annually

By: Qualified Service Technician

Tools needed: Protective gloves, vacuum cleaner, dust cloths

- Vacuum and wipe out dust, cobwebs, debris or pet hair. Use caution when cleaning these areas. Screw tips that have penetrated the sheet metal are sharp and should be avoided.

- Remove all foreign objects.
- Verify unobstructed air circulation.

Burner Ignition and Operation

Frequency: Annually

By: Qualified Service Technician

Tools needed: Protective gloves, vacuum cleaner, whisk broom, flashlight, voltmeter, indexed drill bit set, and a manometer.

- Verify burner is properly secured and aligned with pilot or igniter.
- Clean off burner top, inspect for plugged ports, corrosion or deterioration. Replace burner if necessary.
- Check for smooth lighting and ignition carryover to all ports. Verify that there is no ignition delay.
- Inspect for lifting or other flame problems.
- Verify air shutter setting is correct. See Section 14.J for required air shutter setting. Verify air shutter is clear of dust and debris.
- Inspect orifice for soot, dirt and corrosion. Verify orifice size is correct. See Service Parts List for proper orifice sizing.
- Verify manifold and inlet pressures. Adjust regulator as required.
- Inspect pilot flame pattern and strength. See Figure 3.1 for proper pilot flame pattern. Clean or replace orifice spud as necessary.
- Inspect IPI flame-sensing rod for soot, corrosion and deterioration. Polish with fine steel wool or replace as required.
- Verify IPI millivolt output. Replace as necessary.
- Verify that there is not a short in flame sense circuit by checking continuity between pilot hood and flame-sensing rod. Replace pilot as necessary.



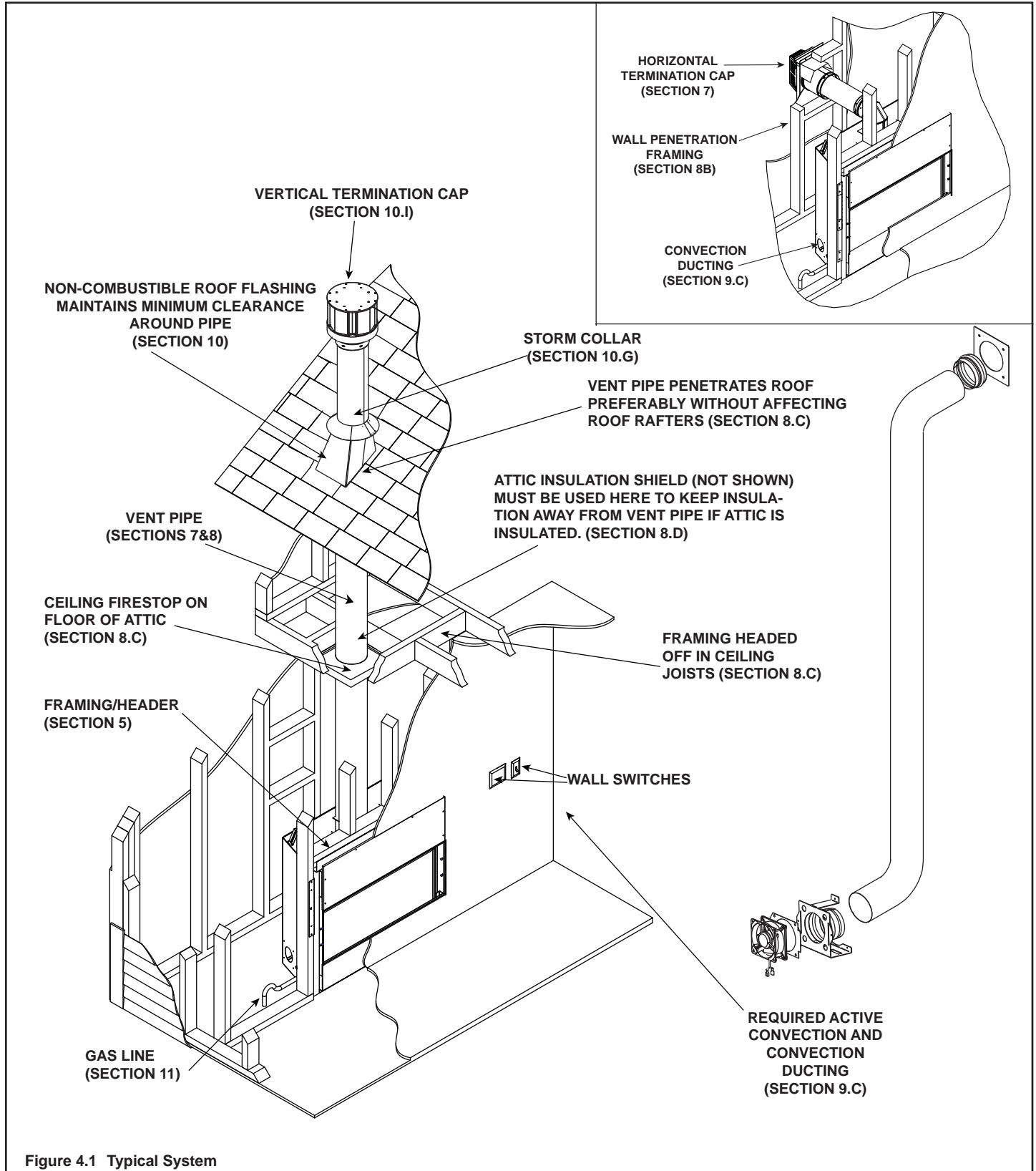
Figure 3.1 IPI Pilot

4 Getting Started

Installer Guide

A. Typical Appliance System

NOTICE: Illustrations and photos reflect typical installations and are for design purposes only. Illustrations/diagrams are not drawn to scale. Actual product may vary from pictures in manual



→ Figure 4.1 Typical System

B. Design and Installation Considerations

Heat & Glo direct vent gas appliances are designed to operate with all combustion air siphoned from outside of the building and all exhaust gases expelled to the outside. No additional outside air source is required.

Installation **MUST** comply with local, regional, state and national codes and regulations. Consult insurance carrier, local building inspector, fire officials or authorities having jurisdiction over restrictions, installation inspection and permits.

NOTICE: *The blower motor present in this appliance will generate sound during operation. The effects of the increased sound level can be minimized with careful planning during installation of the system. Locating the convection intake grill in an area remote of immediate living space will reduce the effects of the added sound generated during operation.*

Before installing, determine the following:

- Where the appliance is to be installed.
- The vent system configuration to be used.
- Gas supply piping.
- Electrical wiring requirements.
- Framing and finishing details.
- Whether optional accessories—devices such as a wall switch or remote control—are desired.

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. For assistance or additional information, consult a qualified service technician, service agency or your dealer.

C. Tools and Supplies Needed

Before beginning the installation be sure that the following tools and building supplies are available.

- | | |
|--------------|--|
| Tape measure | Framing material |
| Pliers | Non-corrosive leak check solution |
| Hammer | Phillips screwdriver (magnetic) |
| Gloves | Framing square |
| Voltmeter | Electric drill and bits (1/4 in. magnetic) |
| Plumb line | Safety glasses |
| Level | Reciprocating saw |
| Manometer | Flat blade screwdriver |
- 1/2 - 3/4 in. length, #6 or #8 Self-drilling screws
Caulking material (300°F minimum continuous exposure rating)
One 1/4 in. female connection (for optional fan).

D. Inspect Appliance and Components

- Carefully remove the appliance and components from the packaging.
- The vent system components and decorative doors and fronts may be shipped in separate packages.
- If packaged separately, the media and/or refractory kits must be installed.
- Report to your dealer any parts damaged in shipment, particularly the condition of the glass.
- **Read all of the instructions before starting the installation. Follow these instructions carefully during the installation to ensure maximum safety and benefit.**

WARNING! Risk of Fire or Explosion! *Damaged parts could impair safe operation. DO NOT install damaged, incomplete or substitute components. Keep appliance dry.*

Hearth & Home Technologies disclaims any responsibility for, and the warranty will be voided by, the following actions:

- Installation and use of any damaged appliance or vent system component.
- Modification of the appliance or vent system.
- Installation other than as instructed by Hearth & Home Technologies.
- Improper positioning of the gas logs or the glass door.
- Installation and/or use of any component part not approved by Hearth & Home Technologies.

Any such action may cause a fire hazard.

WARNING! Risk of Fire, Explosion or Electric Shock! *DO NOT use this appliance if any part has been under water. Call a qualified service technician to inspect the appliance and to replace any part of the control system and/or gas control which has been under water.*

5 Framing and Clearances

A. Selecting Appliance Location

When selecting a location for the appliance it is important to consider the required clearances to walls (see Figure 5.1).

WARNING! Risk of Fire or Burns! Provide adequate clearance around air openings and for service access. **Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.**

NOTICE: Illustrations reflect typical installations and are FOR DESIGN PURPOSES ONLY. Illustrations/diagrams are not drawn to scale. Actual installation may vary due to individual design preference.

It is important to follow the framing and finishing instructions step by step to ensure proper placement of fireplace in the surrounding framing/finishing materials. For additional information and considerations for the active convection technology in regards to appliance location and framing, see Section 9.

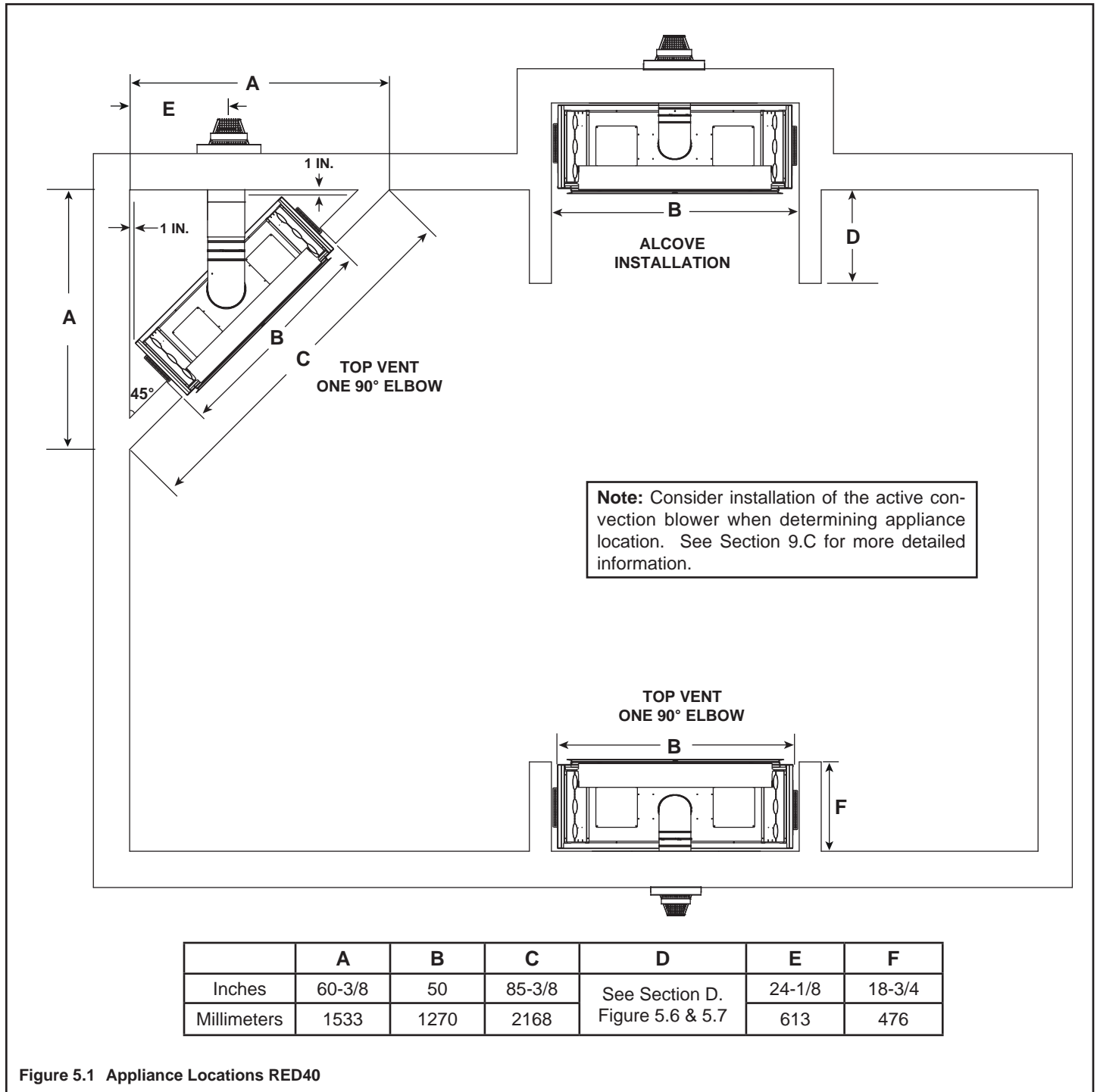
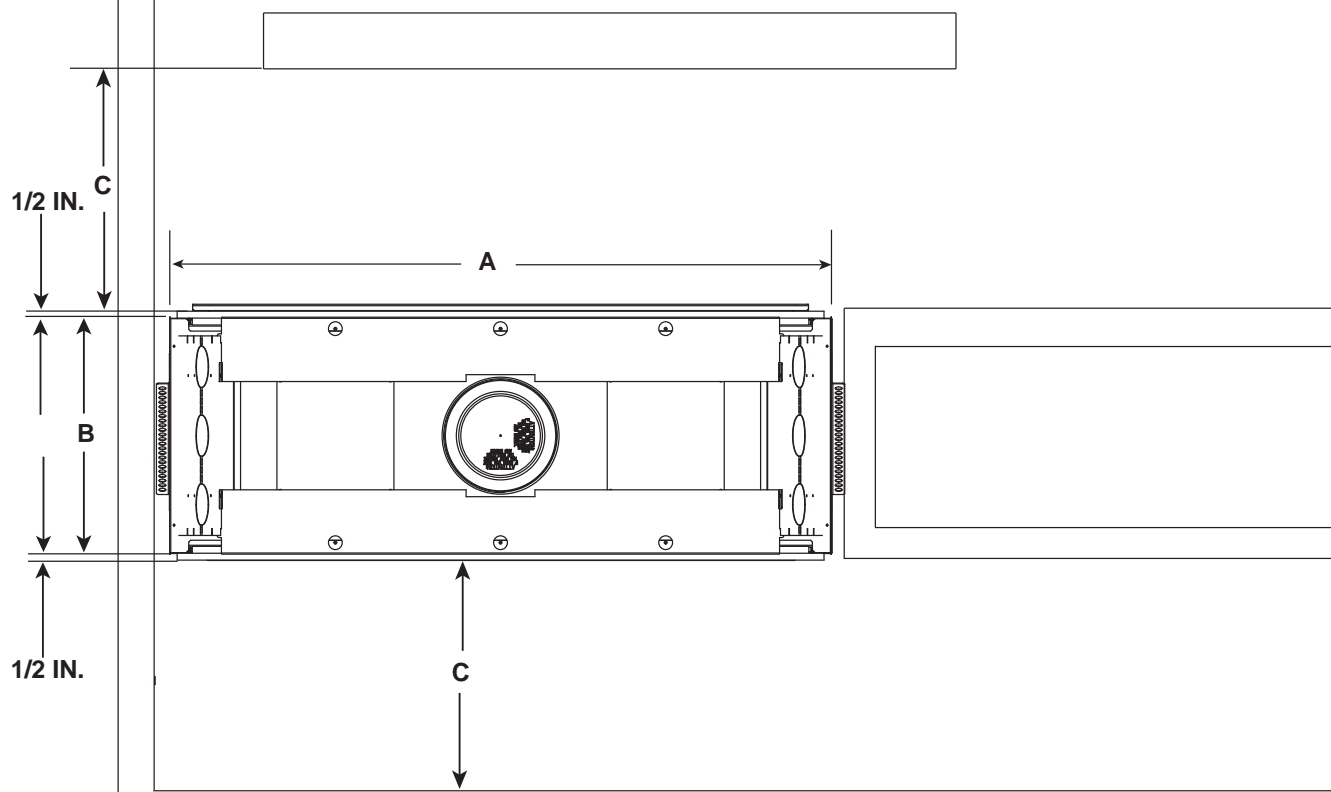


Figure 5.1 Appliance Locations RED40

Note: Consider installation of the active convection blower when determining appliance location. See Section 9.C for more detailed information.



	A	B	C
Inches	48	17-1/4	36
Millimeters	1218	438	914

Figure 5.2 Appliance Locations RED40ST

B. Constructing the Appliance Chase

A chase is a vertical box-like structure built to enclose the gas appliance and/or its vent system. In cooler climates the vent should be enclosed inside the chase.

NOTICE: Treatment of ceiling firestops and wall shield firestops and construction of the chase may vary with the type of building. These instructions are not substitutes for the requirements of local building codes. Therefore, you **MUST** check local building codes to determine the requirements to these steps.

Chases should be constructed in the manner of all outside walls of the home to prevent cold air drafting problems. The chase should not break the outside building envelope in any manner.

Walls, ceiling, base plate and cantilever floor of the chase should be insulated. Vapor and air infiltration barriers should be installed in the chase as per regional codes for the rest of the home. Additionally, in regions where cold air infiltration may be an issue, the inside surfaces may be sheetrocked and taped for maximum air tightness.

To further prevent drafts, the wall shield and ceiling firestops should be caulked with caulk with a minimum of 300°F continuous exposure rating to seal gaps. Gas line holes and other openings should be caulked with caulk with a minimum of 300°F continuous exposure rating or stuffed with unfaced insulation. If the appliance is being installed on a cement surface, a layer of plywood may be placed underneath to prevent conducting cold up into the room.

C. Clearances

NOTICE: Install appliance on hard metal or wood surfaces extending full width and depth. **DO NOT** install directly on carpeting, vinyl, tile or any combustible material other than wood.

WARNING! Risk of Fire! Maintain specified air space clearances to appliance and vent pipe:

- Insulation and other materials must be secured to prevent accidental contact.
- The chase must be properly blocked to prevent blown insulation or other combustibles from entering and making contact with fireplace or chimney.
- Failure to maintain airspace may cause overheating and fire.

Note: Figure 5.3, Figure 5.4, and Figure 5.5 show the fireplace installed on the floor. However, this fireplace can be elevated off the floor provided that the fireplace is properly supported by framing materials and the ceiling clearances are maintained.

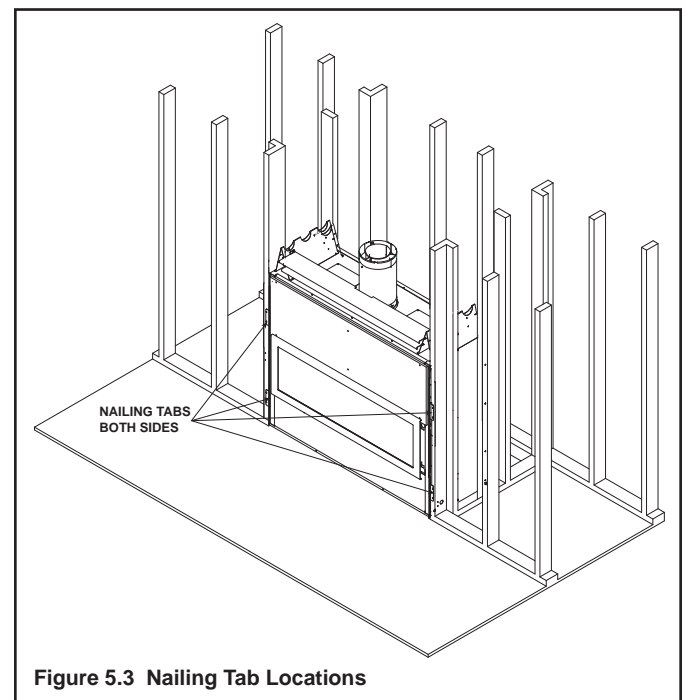
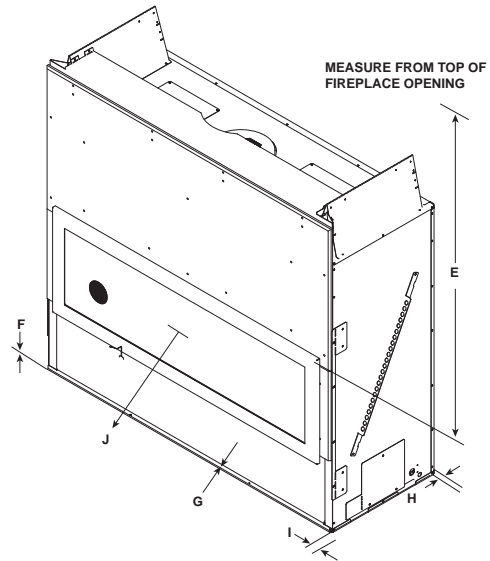
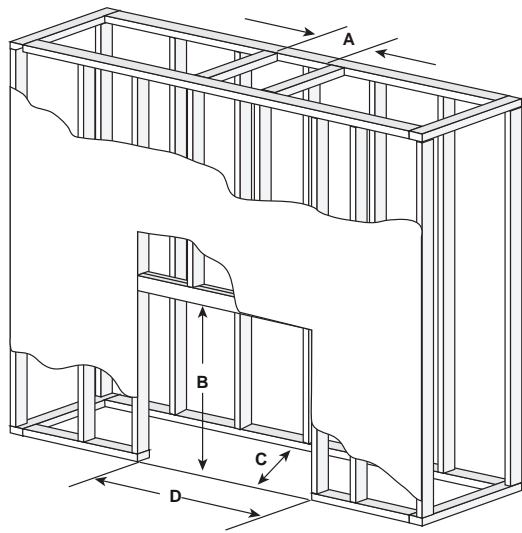


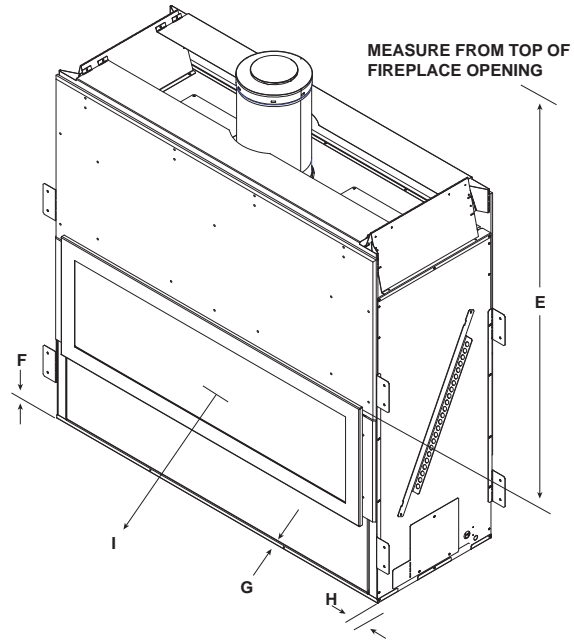
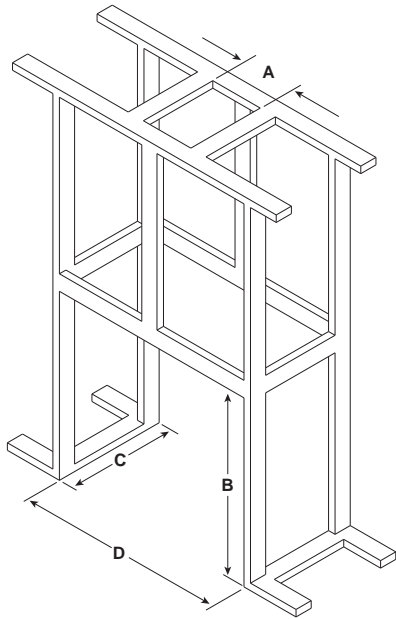
Figure 5.3 Nailing Tab Locations



MINIMUM FRAMING DIMENSIONS*

	A	B	C	D	E	F	G	H	I	J
	Rough Opening (Vent Pipe)	Rough Opening (Height)	Rough Opening (Depth)	Rough Opening (Width)	Clearance to Ceiling	Combustible Floor	Combustible Flooring	Behind Appliance	Sides of Appliance	Front of Appliance
Inches	10	46-3/4	18-1/4	50-1/4	31	0	0	1	1	36
Millimeters	254	1187	464	1276	787	0	0	25	25	914

Figure 5.4. Clearances to Combustibles-RED40



MINIMUM FRAMING DIMENSIONS*

	A	B	C	D	E	F	G	H	I
	Rough Opening (Vent Pipe)	Rough Opening (Height)	Rough Opening (Depth)	Rough Opening (Width)	Clearance to Ceiling	Combustible Floor	Combustible Flooring	Sides of Appliance	Front or Rear of Appliance
Inches	10	46-3/4	17-1/4	50-1/4	31	0	0	1	36
Millimeters	254	1187	438	1276	787	0	0	25	914

Figure 5.5. Clearances to Combustibles-RED40ST

D. Mantel and Wall Projections

WARNING! Risk of Fire! Comply with all minimum clearances to combustibles as specified. Framing or finishing material closer than the minimums listed must be constructed entirely of noncombustible materials (i.e., steel studs, concrete board, etc).

Combustible Mantels

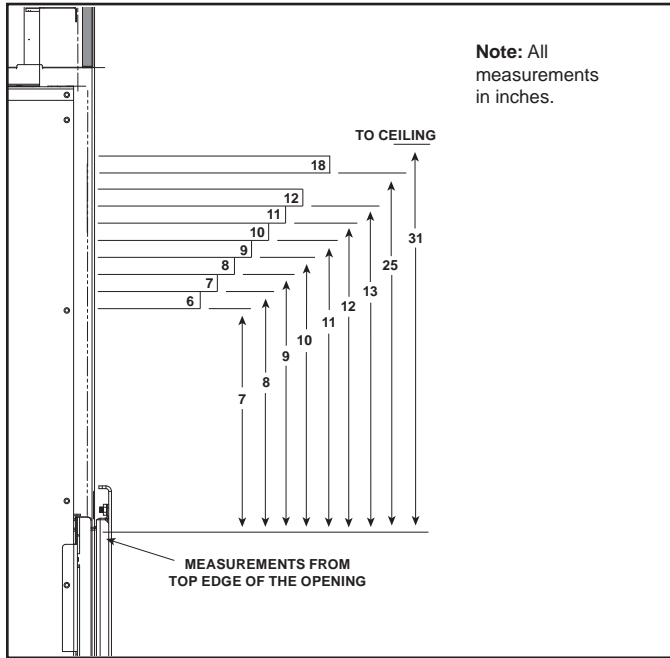


Figure 5.6 Minimum Vertical and Maximum Horizontal Dimensions of Combustibles

Note: For non-combustible fireplace finish material (marble, stone, etc) specifications refer to Section 13.

Non-Combustible Mantels

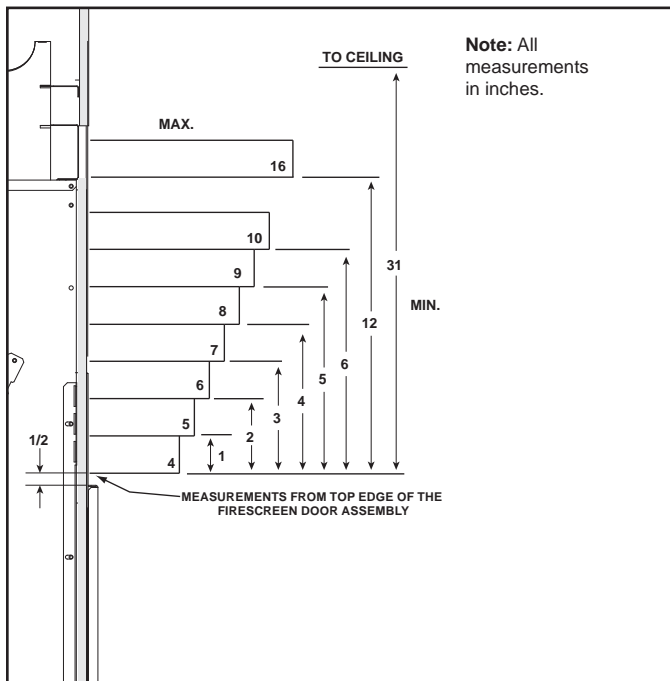


Figure 5.7 Minimum Vertical and Maximum Horizontal Dimensions of Non-Combustibles

Combustible Mantel Legs Or Wall Projections Extending Past The Face Of The Fireplace

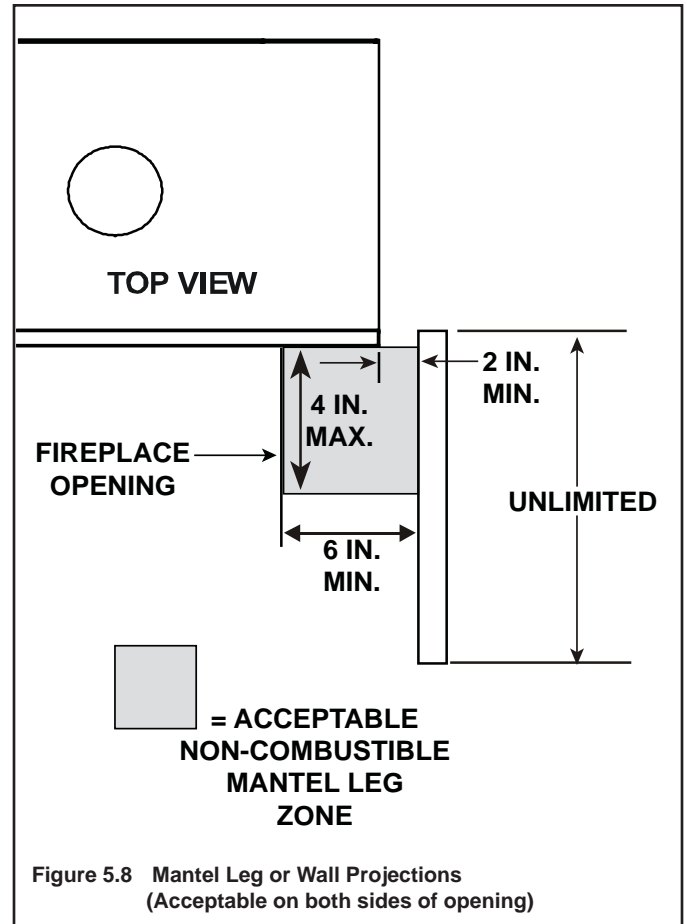



Figure 5.8 Mantel Leg or Wall Projections (Acceptable on both sides of opening)

6 Termination Locations

A. Vent Termination Minimum Clearances

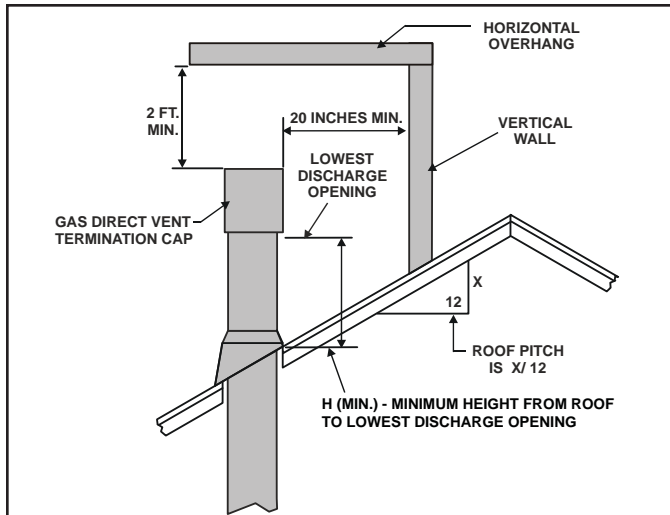


WARNING

Fire Risk.
Maintain vent clearance to combustibles as specified.

- DO NOT** pack air space with insulation or other materials.

Failure to keep insulation or other materials away from vent pipe may cause overheating and fire.

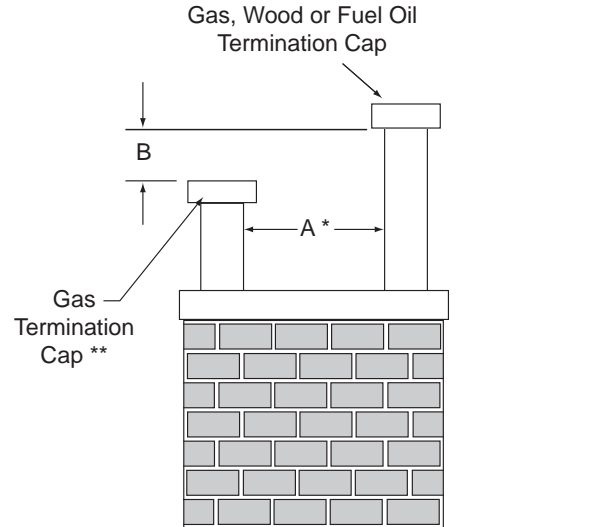


Roof Pitch	H (Min.) Ft.
Flat to 6/12.....	1.0*
Over 6/12 to 7/12.....	1.25*
Over 7/12 to 8/12.....	1.5*
Over 8/12 to 9/12.....	2.0*
Over 9/12 to 10/12.....	2.5
Over 10/12 to 11/12.....	3.25
Over 11/12 to 12/12.....	4.0
Over 12/12 to 14/12.....	5.0
Over 14/12 to 16/12.....	6.0
Over 16/12 to 18/12.....	7.0
Over 18/12 to 20/12.....	7.5
Over 20/12 to 21/12.....	8.0

* 3 foot minimum in snow regions

Figure 6.1 Minimum Height From Roof To Lowest Discharge Opening

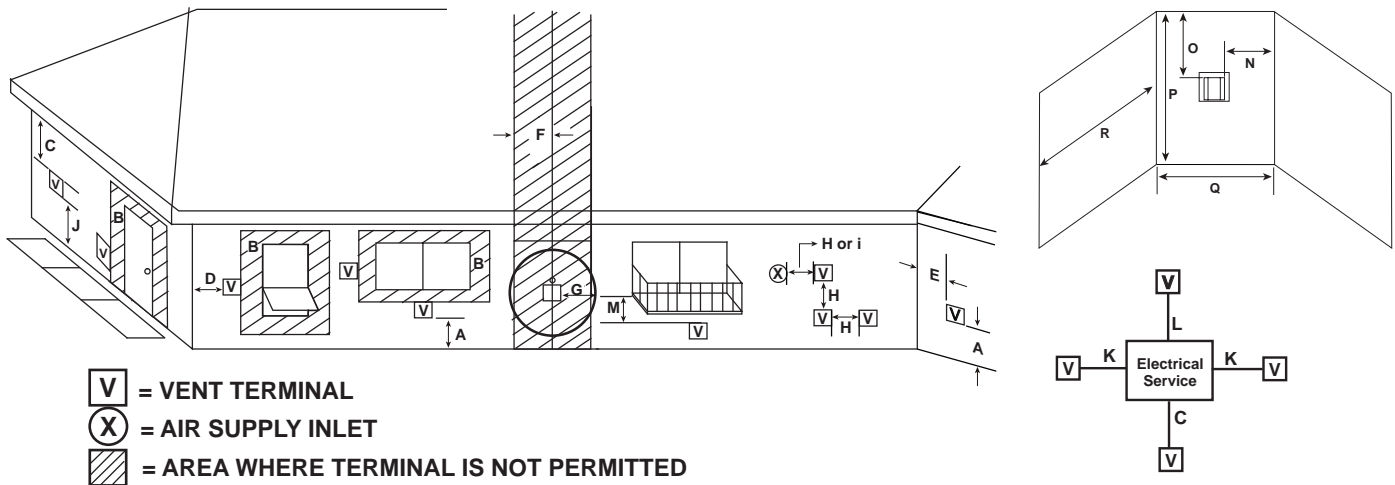
A	B
6 in. (minimum) up to 20 in. 152 mm/508 mm	18 in. minimum 457 mm
20 in. and over	0 in. minimum



* If using decorative cap cover(s), this distance may need to be increased. Refer to the installation instructions supplied with the decorative cap cover.

** In a staggered installation with both gas and wood or fuel oil terminations, the wood or fuel oil termination cap must be higher than the gas termination cap.

Figure 6.2 Staggered Termination Caps



- V** = VENT TERMINAL
X = AIR SUPPLY INLET
 [Hatched] = AREA WHERE TERMINAL IS NOT PERMITTED
- A = 12 inches.....clearances above grade, veranda, porch, deck or balcony
 B = 12 inches.....clearance to window or door that may be opened, or to permanently closed window
 C = 18 inches.....clearance below unventilated soffit
 18 inches.....clearance below ventilated soffit
 30 inches.....clearance below vinyl soffits and electrical service
 D = 6 inches.....clearance to outside corner
 E = 6 inches.....clearance to inside corner
 F = 3 ft. (Canada).....not to be installed above a gas meter/regulator assembly within 3 feet horizontally from the center-line of the regulator
 G = 3 ft.....clearance to gas service regulator vent outlet
 H = 9 inches (U.S.A)
 12 inches (Canada).clearance to non-mechanical (unpowered) air supply inlet, combustion air inlet or direct-vent termination
 i = 3 ft. (U.S.A.)
 6 ft. (Canada).....clearance to a mechanical (powered) air supply inlet
 All mechanical air intakes within 10 feet of a termination cap must be a minimum of 3 feet below termination.
 J = 7 ft..... On **public** property: clearance above paved sidewalk or a paved driveway.
 A vent shall not terminate directly above a sidewalk or paved driveway which is located between two single family dwellings and serves both dwellings.

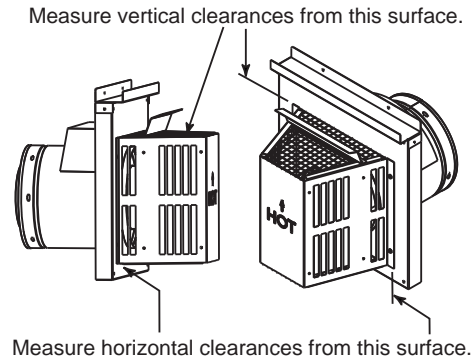
- K = 6 inches.....clearance from sides of electrical service
 L = 12 inches.....clearance above electrical service
 Location of the vent termination must not interfere with access to the electrical service.

- M = 18 inchesclearance under veranda, porch, deck, balcony or overhang
 42 inchesvinyl or composite overhang
 Permitted when veranda, porch, deck or balcony is fully open on a minimum of 2 sides beneath the floor.

Covered Alcove Applications
 (Spaces open only on one side and with an overhang)

N = 6 inches non-vinyl sidewalls
 12 inches vinyl sidewalls
 O = 18 inches non-vinyl soffit and overhang
 42 inches vinyl soffit and overhang
 P = 8 ft.

	Q _{MIN}	R _{MAX}
1 cap	3 feet	2 x Q _{ACTUAL}
2 caps	6 feet	1 x Q _{ACTUAL}
3 caps	9 feet	2/3 x Q _{ACTUAL}
4 caps	12 feet	1/2 x Q _{ACTUAL}
Q _{MIN} = # termination caps x 3 R _{MAX} = (2 / # termination caps) x Q _{ACTUAL}		



CAUTION! Risk of Burns! Termination caps are **HOT**, consider proximity to doors, traffic areas or where people may pass or gather (sidewalk, deck, patio, etc.). Listed cap shields available. Contact your dealer.

- Local codes or regulations may require different clearances.
- Vent system termination is **NOT** permitted in screened porches.
- Vent system termination is permitted in porch areas with two or more sides open.
- Hearth & Home Technologies assumes no responsibility for the improper performance of the appliance when the venting system does not meet these requirements.
- Vinyl protection kits are suggested for use with vinyl siding.

➔ **Figure 6.3 Minimum Clearances for Termination**

7 Vent Information and Diagrams

A. Approved Pipe

This appliance is approved for use with Hearth & Home Technologies DVP venting systems. Refer to Section 16B for vent component information.

DO NOT mix pipe, fittings or joining methods from different manufacturers.

The pipe is tested to be run inside an enclosed wall. There is no requirement for inspection openings at each joint within the wall.

WARNING! Risk of Fire or Asphyxiation. This appliance requires a separate vent. **DO NOT** vent to a pipe serving a separate solid fuel burning appliance.

B. Vent Table Key

The abbreviations listed in this vent table key are used in the vent diagrams.

Symbol	Description
V ₁	First section (closest to appliance) of vertical length
V ₂	Second section of vertical length
H ₁	First section (closest to appliance) of horizontal length
H ₂	Subsequent sections of horizontal length

C. Use of Elbows

Diagonal runs have both vertical and horizontal vent aspects when calculating the effects. Use the rise for the vertical aspect and the run for the horizontal aspect (see Figure 7.1).

Two 45° elbows may be used in place of one 90° elbow. On 45° runs, one foot of diagonal is equal to 8-1/2 in. (216 mm) horizontal run and 8-1/2 in. (216 mm) vertical run. A length of straight pipe is allowed between two 45° elbows (see Figure 7.1).

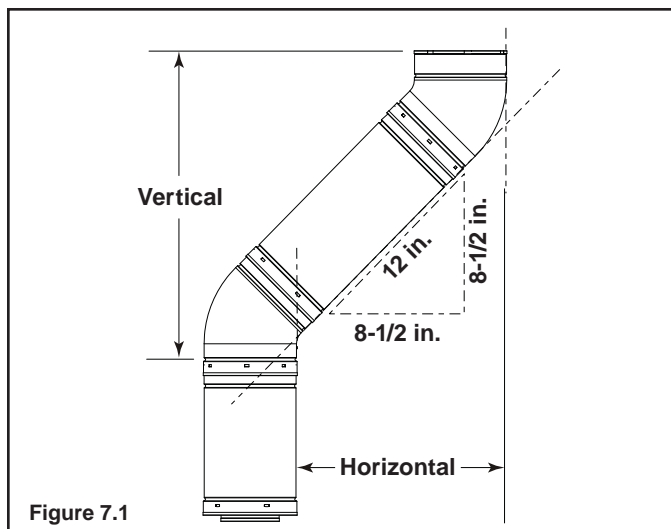


Figure 7.1

D. Measuring Standards

Vertical and horizontal measurements listed in the vent diagrams were made using the following standards.

- Pipe measurements are shown using the effective length of pipe (see Figure 7.2).
- Measurements are made from the appliance outer wrap, not from the standoffs.
- Horizontal terminations are measured to the outside mounting surface (flange of termination cap).
- Vertical terminations are measured to bottom of termination cap.
- Horizontal pipe installed level with no rise.

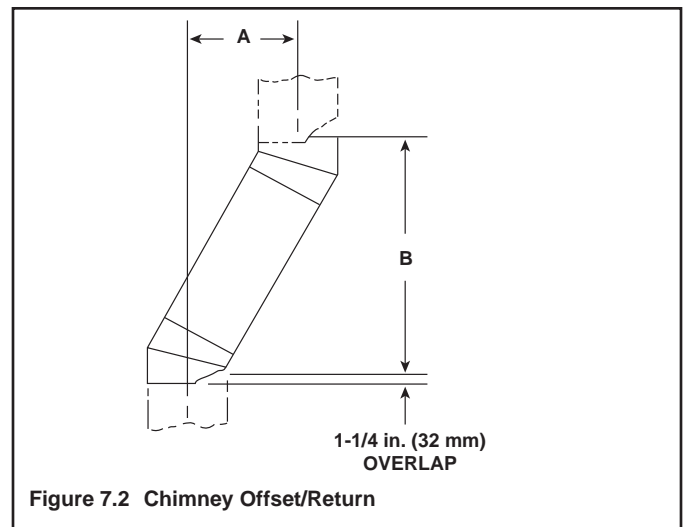


Figure 7.2 Chimney Offset/Return

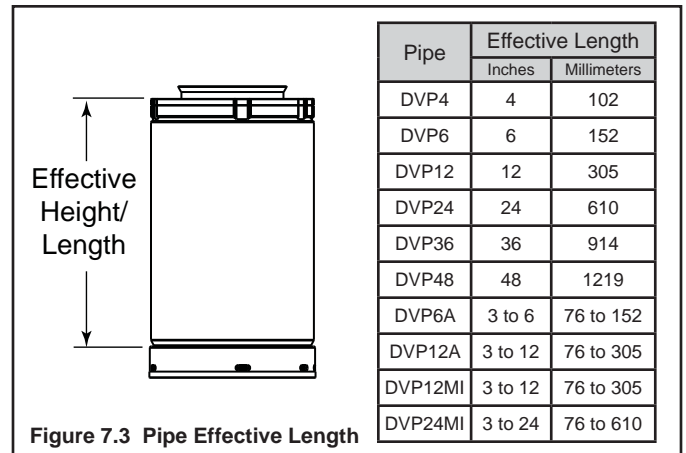


Figure 7.3 Pipe Effective Length

E. Vent Diagrams

General Rules:

- When penetrating a combustible wall, a wall shield firestop must be installed.
- When penetrating a combustible ceiling, a ceiling firestop must be installed.
- Horizontal runs of vent do not require vertical rise; horizontal runs may be level.

⚠ WARNING



Fire Risk. Explosion Risk.
 Do NOT pack insulation or other combustibles between ceiling firestops.
 • ALWAYS maintain specified clearances around venting and firestop systems.
 • Install wall shield and ceiling firestops as specified.
 Failure to keep insulation or other material away from vent pipe may cause fire.



Top Vent - Horizontal Termination Venting with 1 elbow

V ₁ Minimum		H ₁ Maximum	
1 ft.	305 mm	2 ft.	610 mm
2 ft.	610 mm	6 ft.	1829
3 ft.	914 mm	9 ft.	2743
4 ft.	1219 mm	12 ft.	3658
5 ft.	1524 mm	15 ft.	4572
6 ft.	1829 mm	18 ft.	5486
7 ft.	2134 mm	21 ft.	6401
8 ft.	2438 mm	24 ft.	7315
V ₁ + H ₁ = 63 ft. (19.2 m) Maximum			

Note: 12 inches minimum vertical is required prior to attaching any elbow to the appliance.

Note: Use DVP Series components only.

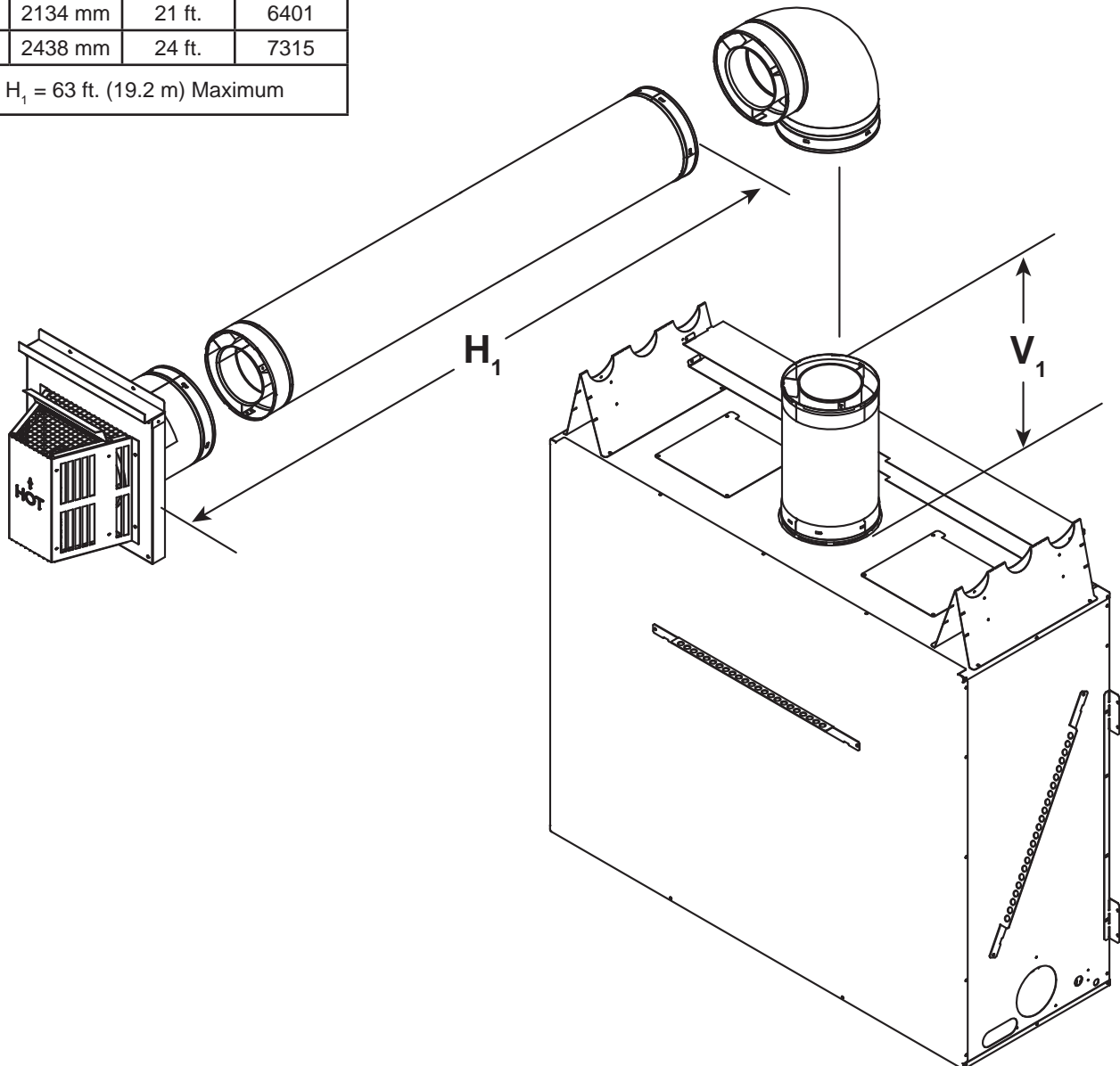


Figure 7.4

1. Top Vent - Horizontal Termination - (continued)

Top Vent - Horizontal Termination Venting with 2 elbows

V ₁ Minimum		H ₁ + H ₂ Maximum	
1 ft.	305 mm	2 ft.	610 mm
2 ft.	610 mm	6 ft.	1829 mm
3 ft.	914 mm	9 ft.	2743 mm
4 ft.	1219 mm	12 ft.	3658 mm

V₁ + H₁ + H₂ = 63 ft. (19.2 m) Maximum
H₁ + H₂ = 23 ft. (7.1 m) Maximum

Note: 12 inches minimum vertical is required prior to attaching any elbow to the appliance.

Note: Use DVP Series components only.

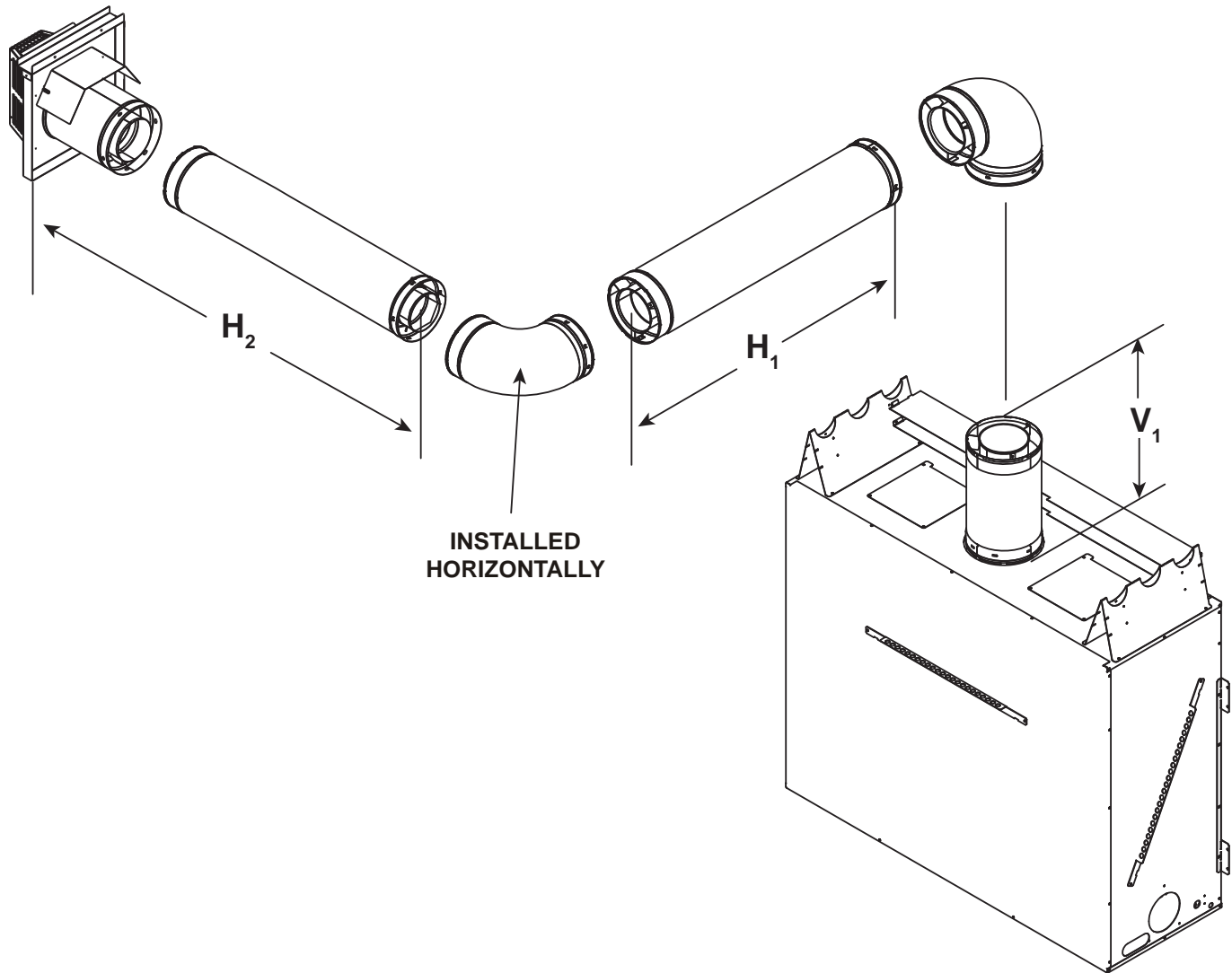


Figure 7.5

1. Top Vent - Horizontal Termination - (continued)

Top Vent - Horizontal Termination Venting with 3 elbows

V ₁ + V ₂ Minimum		H Maximum	
1 ft.	305 mm	2 ft.	610 mm
2 ft.	610 mm	6 ft.	1829 mm
3 ft.	914 mm	9 ft.	2743 mm
4 ft.	1219 mm	12 ft.	3658 mm
5 ft.	1524 mm	15 ft.	4572 mm
V ₁ + V ₂ + H ₁ + H ₂ = 63 ft. (19.2 m) Maximum H ₁ + H ₂ = 23 ft. (7.1 m) Maximum			

Note: 12 inches minimum vertical is required prior to attaching any elbow to the appliance.

Note: Use DVP Series components only.

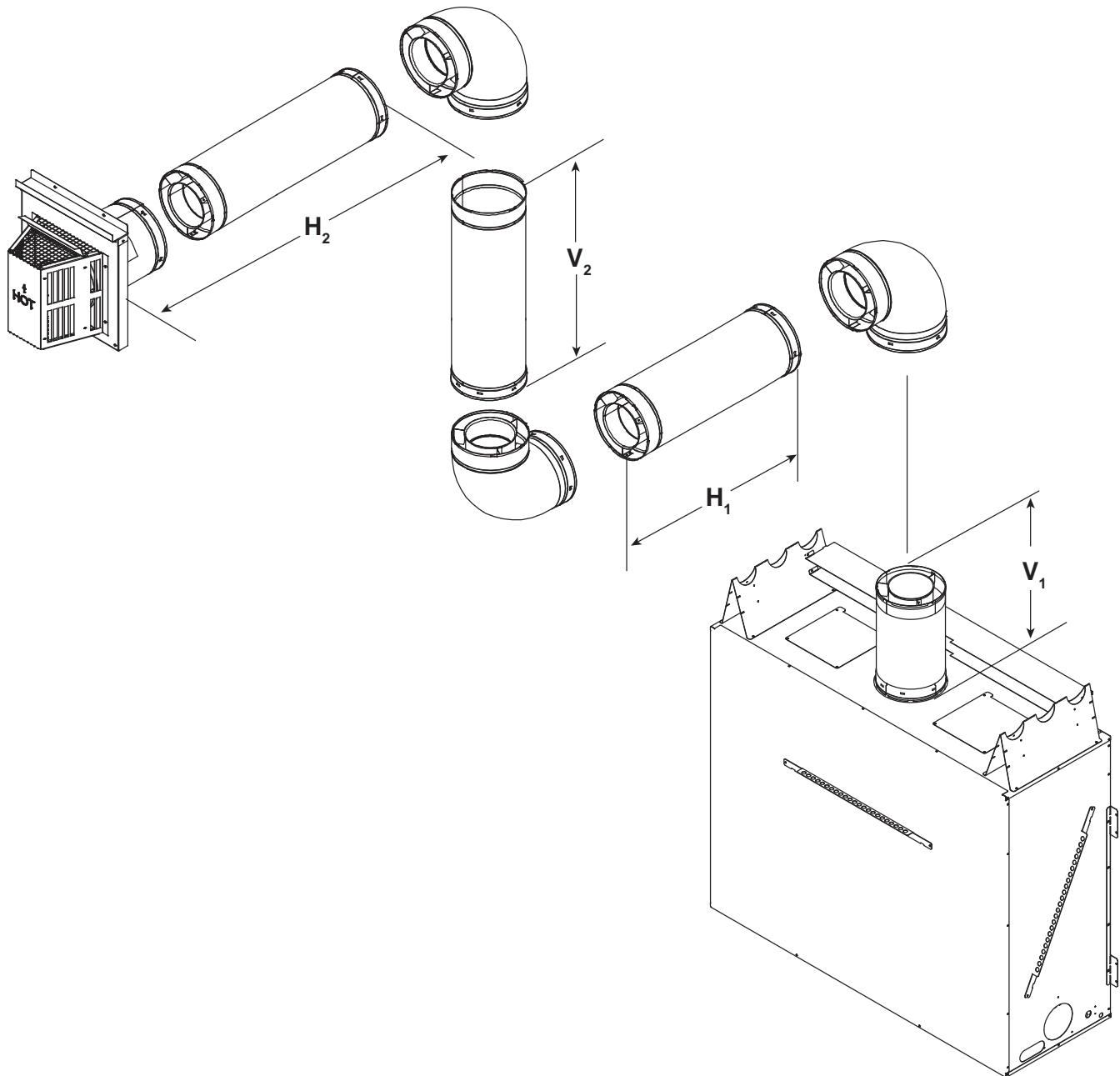
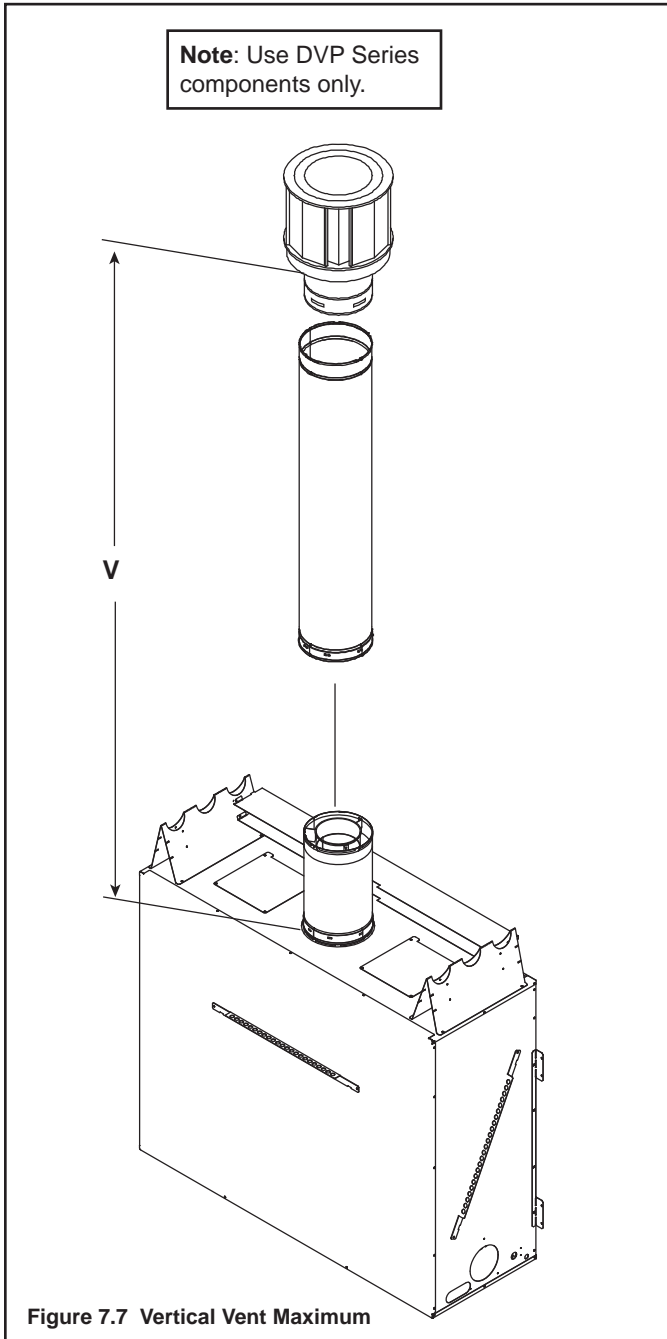


Figure 7.6

Top Vent - Vertical Termination No Elbows

V = 3 ft Min. (1m), 50 ft. Max. (15.2 m)

Note: If installing a vertical vent/termination off the top of the appliance, the optional exhaust restrictor may be needed.



Exhaust restrictors are recommended for these vertically terminated products which have excessive draft. Exhaust restrictors will compensate for high draft, and restore visual flame height. If the vent configuration has a total vertical of 20-50 feet, an exhaust restrictor may be needed. The exhaust restrictor can be located in the appliance manual bag.

Exhaust restrictor Instructions

1. Locate the two pilot holes in the inside firebox chamber as shown in Figure 7.8.
2. Center the exhaust restrictor such that the thru holes in the vent restrictor align with the pilot holes in the inner firebox chamber.
3. Use two 1/2 inch self-piercing screws to secure vent restrictor to firebox heat shield. See Figure 7.8.

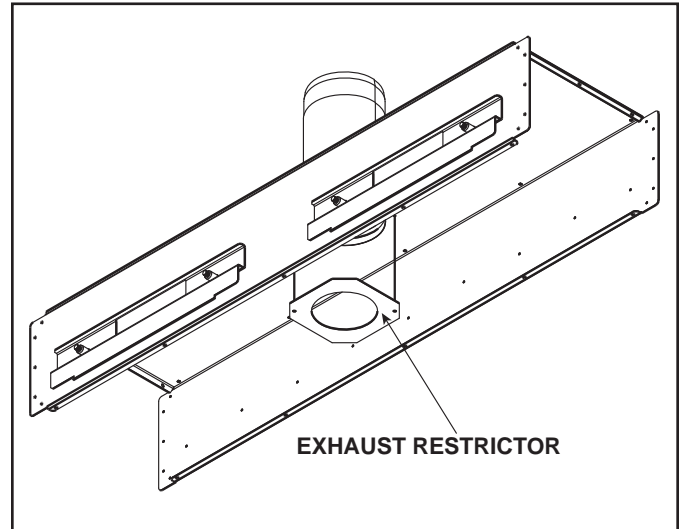


Figure 7.8 Exhaust Restrictor

4. In some applications, such as those where the fireplace is elevated off the floor, the vent restrictor may be painted, but painting is not required.
5. Recommended restrictor usage:
20 to 30 ft. = 4 inch restrictor
30 ft. and up = 3 inch restrictor

NOTICE: Before painting, contact your dealer for information on the appropriate high temperature paint.

Top Vent - Vertical Termination Venting with 2 elbows

$V_1 + V_2$ Minimum		H Maximum	
1 ft.	305 mm	2 ft.	610 mm
2 ft.	610 mm	4 ft.	1219 mm
3 ft.	914 mm	9 ft.	2743 mm
4 ft.	1219 mm	12 ft.	3658 mm
5 ft.	1524 mm	15 ft.	4572 mm
$V_1 + H_1 + V_2 = 63 \text{ ft. (19.2 m)}$ Maximum			
$H_1 + H_2 = 23 \text{ ft. (7.1 m)}$ Maximum			

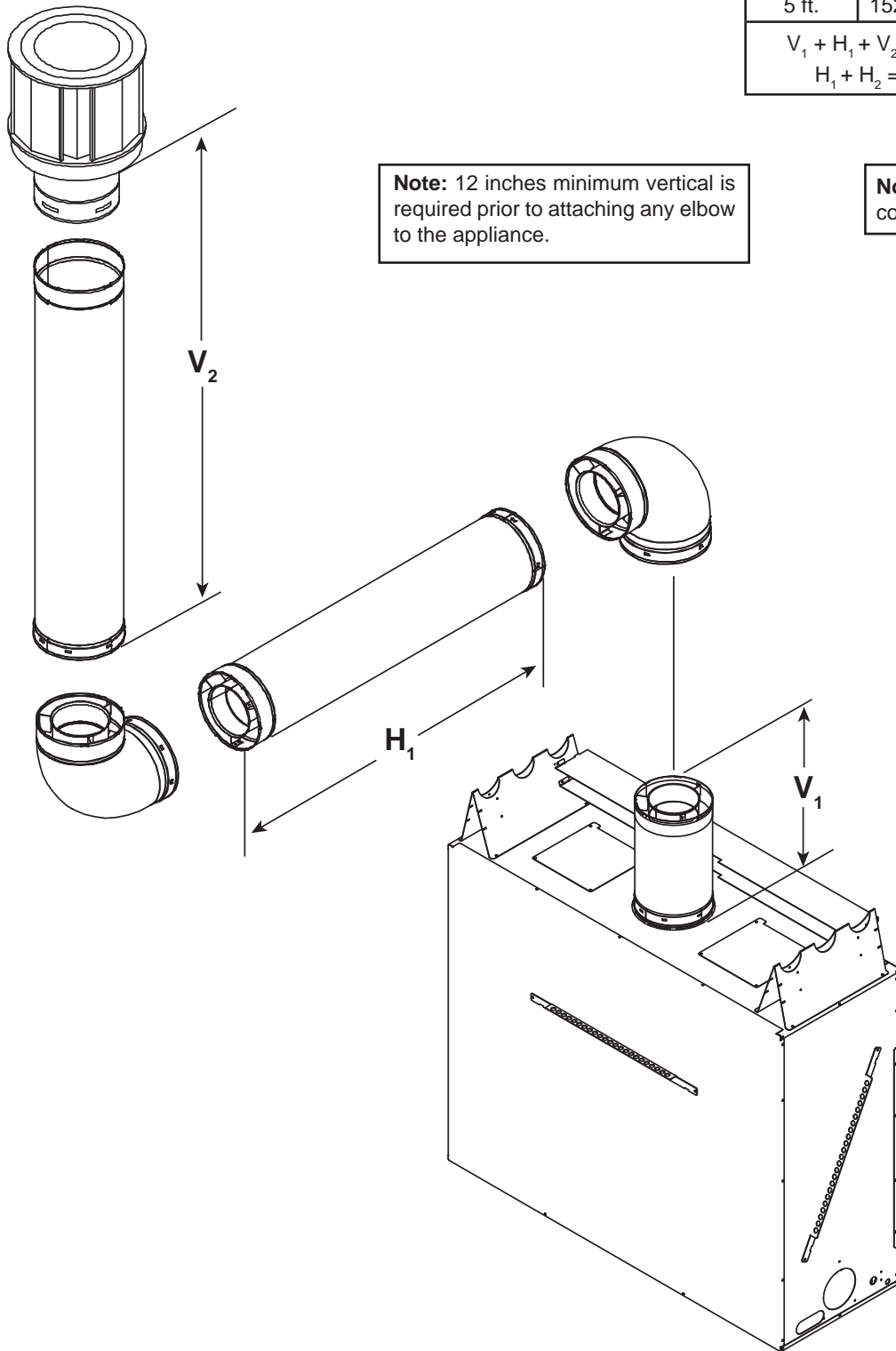


Figure 7.9

Top Vent - Vertical Termination Venting with 3 elbows

$V_1 + V_2$ Minimum		$H_1 + H_2$ Maximum	
1 ft.	305 mm	2 ft.	610 mm
2 ft.	610 mm	4 ft.	1219 mm
3 ft.	914 mm	9 ft.	2743 mm
4 ft.	1219 mm	12 ft.	3658 mm
5 ft.	1524 mm	15 ft.	4572 mm
$V_1 + V_2 + H_1 + H_2 = 63$ ft. (19.2 m) Maximum $H_1 + H_2 = 23$ ft. (7.1 m) Maximum			

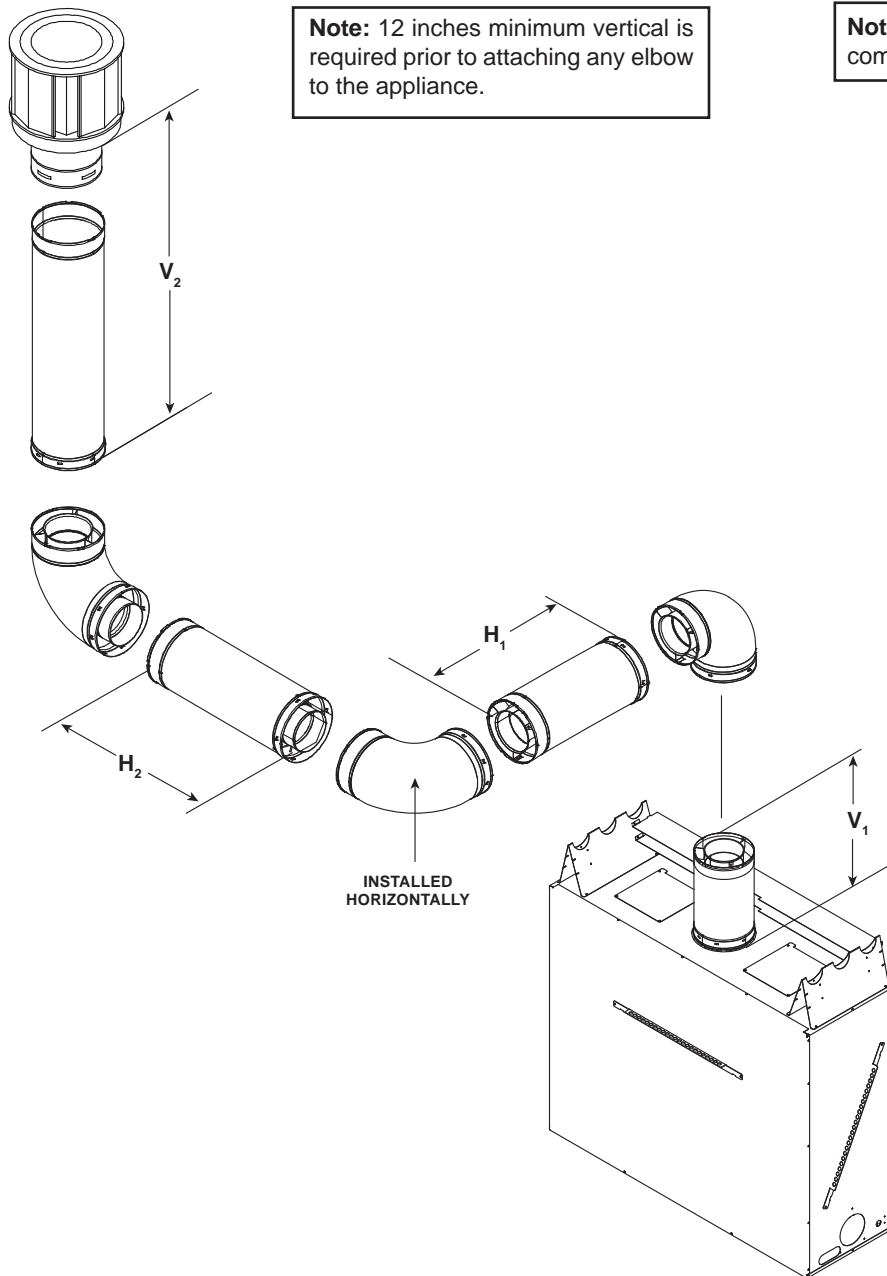
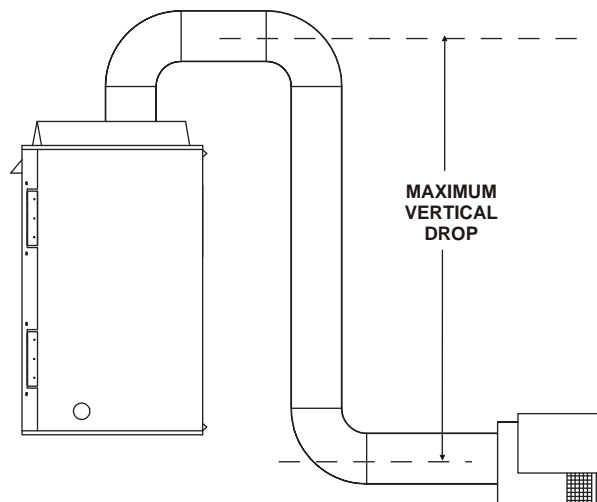


Figure 7.10

Note: The RED40 has been approved for use with the PVK-80 power vent system.

DIRECT VENT WITH 5 in. / 8 in. DIAMETER DVP PIPE		
MAX. ELBOWS (45° & 90°)	MAX. TOTAL VENT RUN (FT.)	MAX. VERT. DROP (FT.)
8	80 ft.	12 ft.



NOTE: Maximum total vent run= Total vertical vent run + Total horizontal vent run

Figure 7.11 Power Vent

8 Vent Clearances and Framing

A. Pipe Clearances to Combustibles

WARNING! Risk of Fire! Maintain air space clearance to vent. **DO NOT** pack insulation or other combustibles:

- Between ceiling firestops
- Between wall shield firestops
- Around vent system

Failure to keep insulation or other material away from vent pipe may cause over heating and fire.

Note: Heat shields MUST overlap by a minimum of 1-1/2 in. (38 mm).
 • DVP heat shield - designed to be used on a wall 4 in. to 7-1/4 in. (102 mm to 184 mm) thick.
 • If wall thickness is less than 4 in. the existing heat shields must be field trimmed. If wall thickness is greater than 7-1/4 in. a DVP-HSM-B will be required.

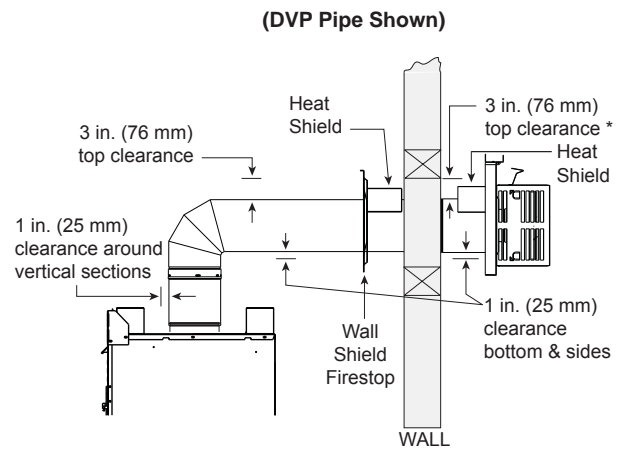


Figure 8.1 Horizontal Venting Clearances To Combustible Materials

B. Wall Penetration Framing

Combustible Wall Penetration

Whenever a combustible wall is penetrated, you must frame a hole for the wall shield firestop(s). The wall shield firestop maintains minimum clearances and prevents cold air infiltration.

- The opening must be framed on all four sides using the same size framing materials as those used in the wall construction.
- DVP pipe - A wall shield firestop must be placed on each side of an interior wall. A minimum 1-1/2 in. (38 mm) overlap of attached heat shields must be maintained.
- See Section 10.K. for information for regarding the installation of a horizontal termination cap.

Non-Combustible Wall Penetration

If the hole being penetrated is surrounded by noncombustible materials such as concrete, a hole with diameter one inch greater than the pipe is acceptable.

Whenever a non-combustible wall is penetrated, the wall shield firestop is only required on one side and no heat shield is necessary.

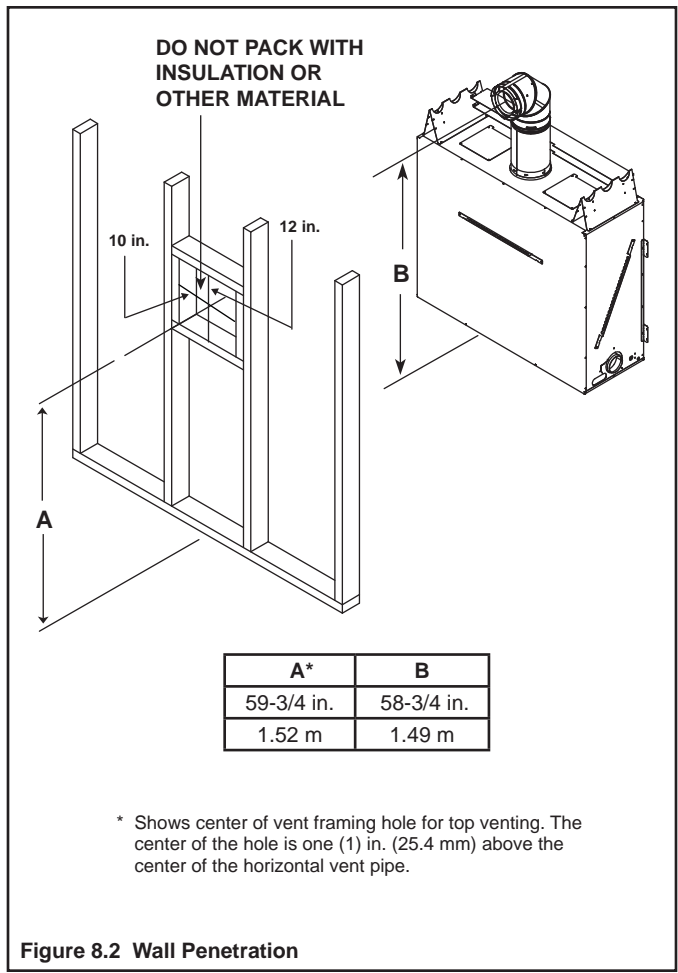


Figure 8.2 Wall Penetration

C. Install the Ceiling Firestop

A ceiling firestop **MUST** be used between floors and attics.

- **DVP pipe only** - Frame an opening 10 in. by 10 in. (254 mm by 254 mm) whenever the vent penetrates a ceiling/floor (see Figure 8.3).
- Frame the area with the same sized lumber as used in ceiling/floor joist.
- The ceiling firestop may be installed above or below the ceiling joists when installed with a attic insulation shield. It must be under joists between floors that are not insulated. Refer to Figure 8.4.
- Secure with three fasteners on each side.

WARNING! Risk of Fire! DO NOT pack insulation around the vent. Insulation must be kept back from the pipe to prevent overheating.

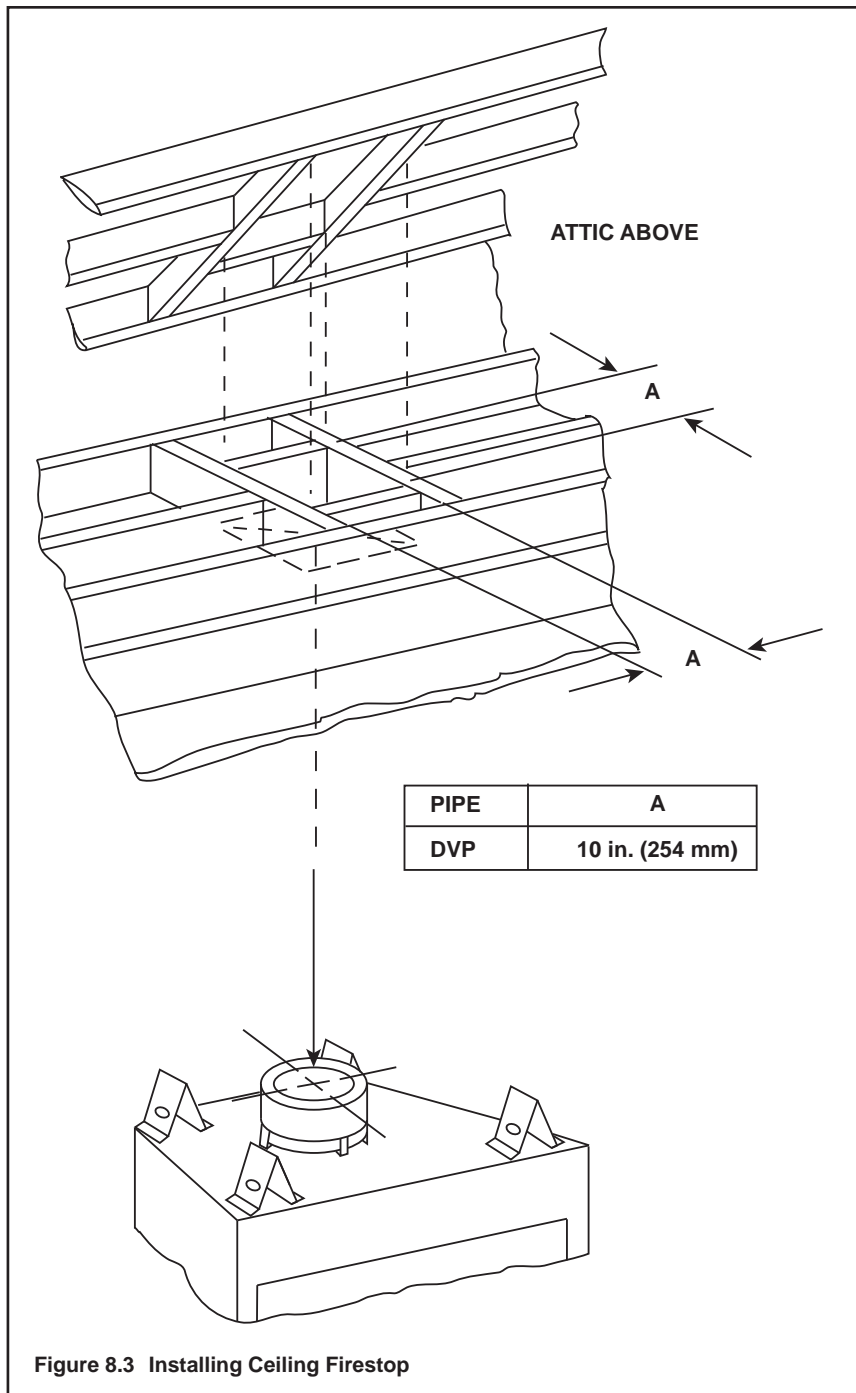


Figure 8.3 Installing Ceiling Firestop

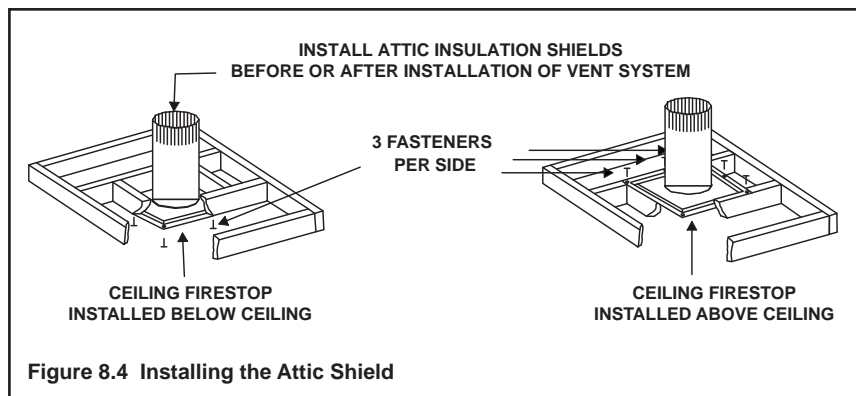


Figure 8.4 Installing the Attic Shield

D. Install Attic Insulation Shield

WARNING! Fire Risk. DO NOT allow loose materials or insulation to touch vent. *Hearth & Home Technologies Inc. requires the use of an attic shield.*

The National Fuel Gas Code ANSI Z223.1 and NFPA 54 requires an attic shield constructed of 26 gauge minimum metal that extends at least 2 in. (51 mm) above insulation.

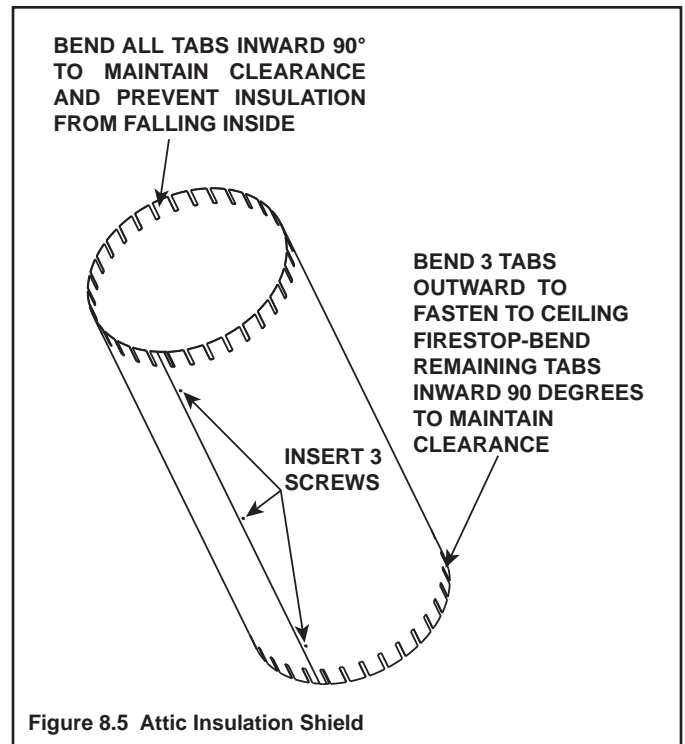
Attic shields must meet specified clearance and be secured in place.

Flat Ceiling Installation

- Remove one shield from box.

NOTICE: *Cut previously installed batt insulation to make room for the attic insulation shield.*

- Wrap shield around pipe if pipe is already installed in area to be insulated.
- Match the three holes in each side and fasten with three screws to form a tube.
- Bend three tabs on the bottom of the shield outward to allow attachment to the ceiling firestop.
- Bend the remaining bottom tabs inward 90° to maintain the air space between the pipe and the shield. Set the shield on the ceiling firestop and attach to the firestop.
- Bend all tabs inward 90° around the top of the shield. These tabs must be used to prevent blown insulation from getting between the shield and vent pipe, and to maintain air space clearance.



Vaulted Ceiling Installation

- Remove one shield from box.

NOTICE: *Cut previously installed batt insulation to make room for the attic insulation shield.*

- Cut the attic insulation shield (if application is for vaulted ceiling) to fit your ceiling pitch. Snip cut edge to recreate 1 in. bend tabs all the way around the bottom.
- Wrap shield around pipe if pipe is already installed in area to be insulated.
- Match the three holes in each side and fasten with three screws to form a tube.
- Bend three tabs on the bottom of the shield outward to allow attachment to the ceiling firestop.
- Bend the remaining bottom tabs inward 90° to maintain the air space between the pipe and the shield. Set the shield on the ceiling firestop and attach to the firestop.
- Bend all tabs inward 90° around the top of the shield. These tabs must be used to prevent blown insulation from getting between the shield and vent pipe, and to maintain air space clearance.

9 Appliance Preparation

A. Appliance Preparation

CAUTION! Risk of Cuts, Abrasions or Flying Debris. Wear protective gloves and safety glasses during installation. Sheet metal edges are sharp.

1. Remove seal cap by lifting up and off of the starting collar.
2. Place first twelve inch vent section on the starting collar.

WARNING! Risk of Fire! A **MINIMUM** of twelve inches vertical pipe is required prior to attaching any elbow to the appliance.

3. Place fiberglass rope ring over initial twelve inch vent section and position tightly to top of appliance.
4. Remove bottom metal panel by removing four screws. Screw locations are shown in Figure 9.1. The two screws on the bottom side are located behind the panel. Remove all four screws and gently lift the panel off the appliance avoiding contact with the non-combustible board if possible.

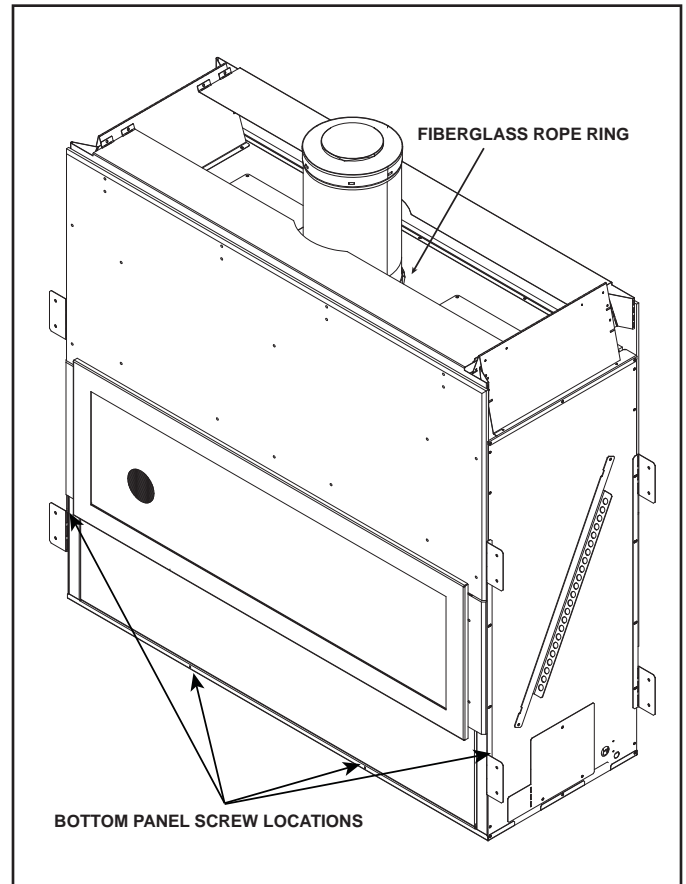


Figure 9.1 Location of Fiberglass Rope Ring

B. Securing and Leveling the Appliance

WARNING! Risk of Fire! Prevent contact with:

- Sagging or loose insulation
- Insulation backing or plastic
- Framing and other combustible materials

Block openings into the chase to prevent entry of blown-in insulation. Make sure insulation and other materials are secured.

DO NOT notch the framing around the appliance standoffs. Failure to maintain air space clearance may cause overheating and fire.

For details on setting the appliance in the framing, refer to section 13.B. The diagram shows how to properly position, level, and secure the appliance (see Figure 9.1). Nailing tabs are provided to secure the appliance to the framing members.

- Bend out the two nailing tabs on each side.
- Place the appliance into position.
- Keep nailing tabs flush with the framing.
- Level the appliance from side to side and front to back.
- Shim the appliance as necessary. It is acceptable to use wood shims underneath the appliance.
- Secure the appliance to the framing by using nails or screws through the nailing tabs.

Figure 9.2 shows the fireplace installed on the floor. However, this fireplace can be elevated off the floor provided that the fireplace is properly supported by framing materials and the ceiling clearances are maintained.

Setting the Fireplace into the Framing

The left and right nailing tabs were designed as a means to ensure the fireplace is mounted flush with the framing materials.

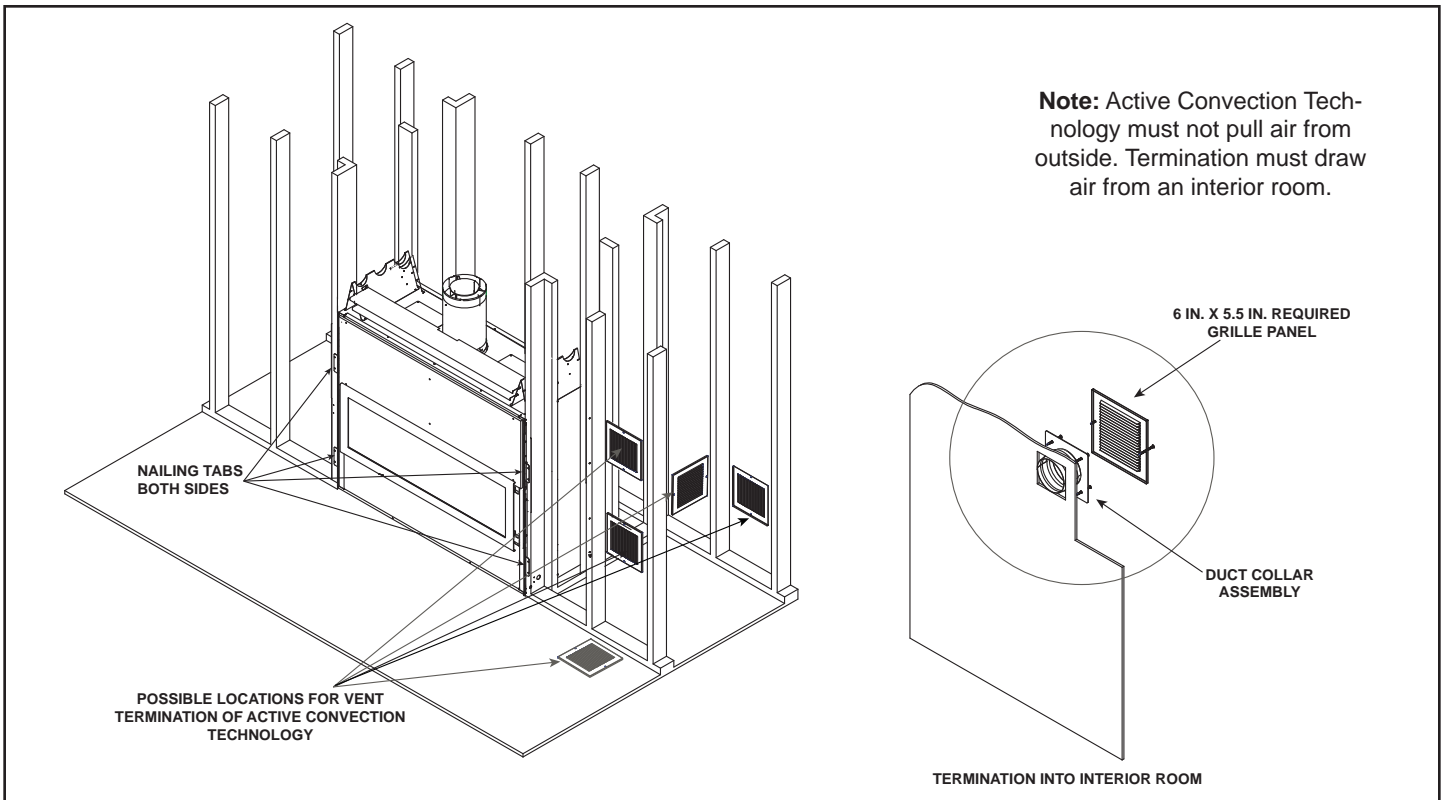
1. Bend out all 4 nailing tabs.
2. Screw each nailing tab to the adjoining framing material. Ensure that the one inch air space clearance is maintained on the sides and back of the fireplace. See Figure 5.4 and Figure 5.5.



Figure 9.3 Nailing Tabs Shipping Position



Figure 9.4 Nailing Tabs Installation Position



➔ Figure 9.2 Proper Positioning, Leveling And Securing Of An Appliance

C. Active Convection Technology

The fireplace appliance has been provided with an active convection blower. The blower is required to keep lower control chamber component temperatures at an ideal operating temperature. The blower also provides for more efficient use of appliance heat by assisting the convection air around the firebox and back into the room. A four inch flexible duct kit has been provided with the appliance. One end of the flex duct will connect to the fan bracket assembly located in the lower control chamber. See Figure 9.6, Detail A. The other end will terminate to an interior wall of the house. The intake grille panel provided with the appliance must be used. See Figure 9.2 and Figure 9.5.

Note: The blower is essential for keeping components and the appliance environment in safe operating temperatures.

Note: Refer to Section 12.C if the active convection blower is to be moved to the right side.

WARNING! Risk of Fire! DO NOT terminate blower vent into an attic, crawl space, or the appliance chase. Vent must terminate on an adjacent, interior wall.

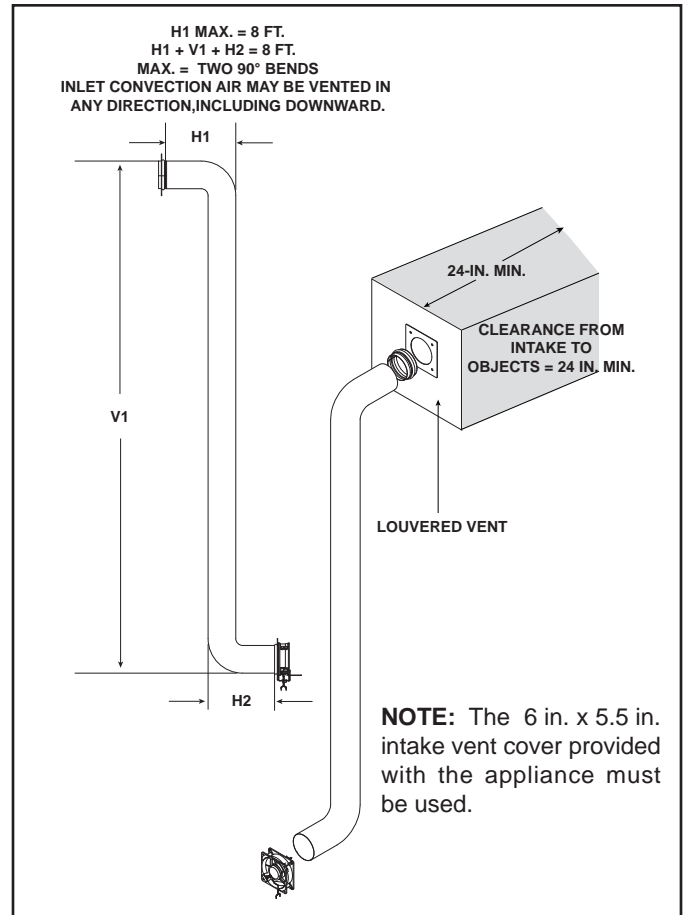
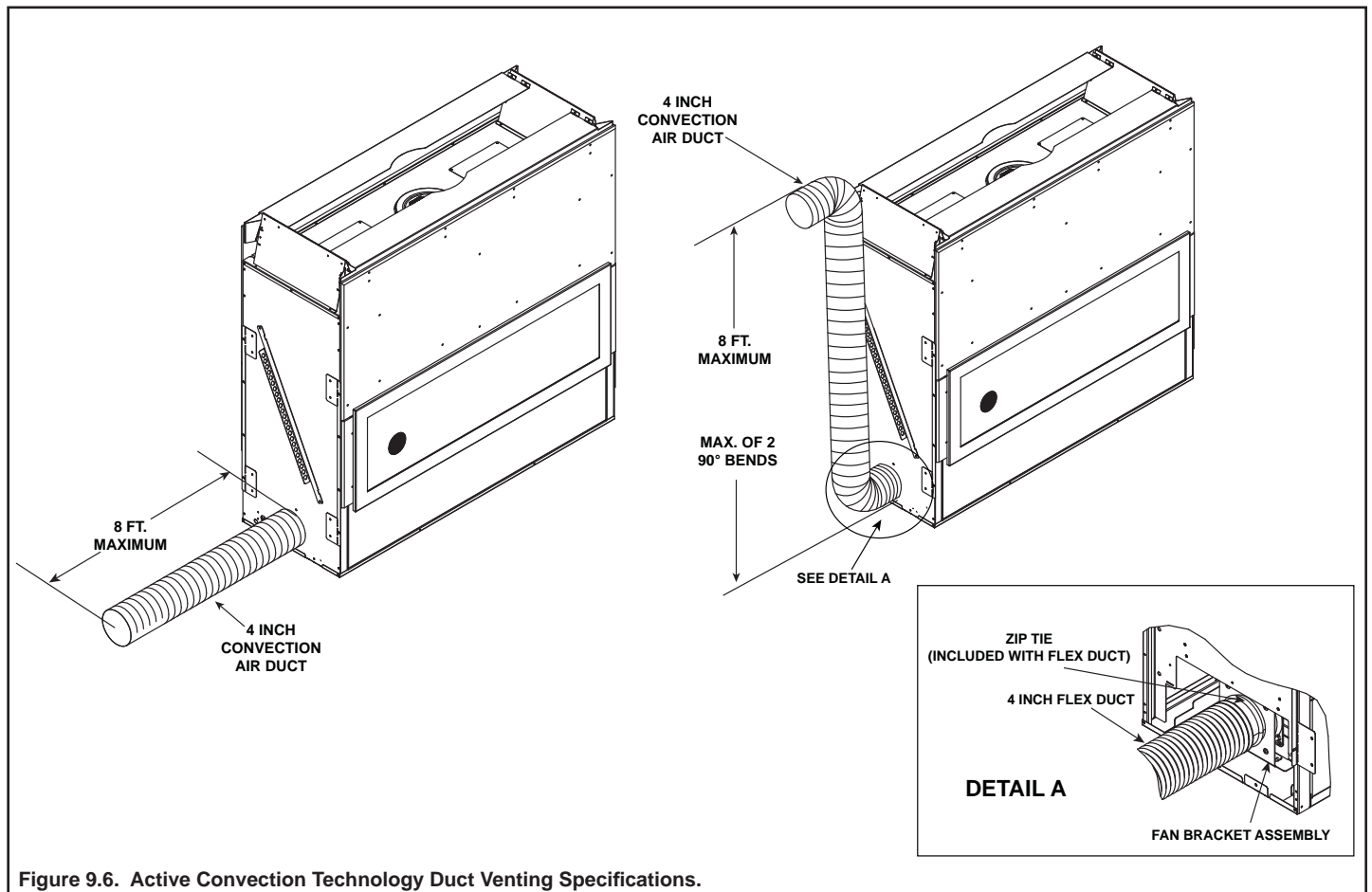


Figure 9.5. Active Convection Technology Duct and Termination. ←



→ Figure 9.6. Active Convection Technology Duct Venting Specifications.

10 Installing Vent Pipe (DVP Pipe)

A. Assemble Vent Sections

To attach the first vent component to the starting collars of the appliance:

- Lock the vent components into place by sliding the pipe section onto the collar.
- Align the seam of the pipe and seam of collar to allow engagement. Rotate the vent component to lock into place. Use this procedure for all vent components. See Figure 10.1.
- Slide the gasket over the first vent section and place it flush to the appliance. This will prevent cold air infiltration. Caulk with a minimum of 300°F continuous exposure rating may be used to hold the part in place.
- Continue adding vent components, locking each succeeding component into place.
- Ensure that each succeeding vent component is securely fitted and locked into the preceding component.

Commercial, Multi-family (Multi-level exceeding two stories), or High-Rise Applications

For Installation into a commercial, multi-family (multi-level exceeding two stories) or high-rise applications: All outer pipe joints must be sealed with silicone with a minimum of 300°F continuous exposure rating, including the slip section that connects directly to the horizontal termination cap.

- Apply a bead of silicone sealant inside the female outer pipe joint prior to joining sections. See Figure 10.2
- Only outer pipes need to be sealed. All unit collar, pipe, slip section, elbow and cap outer flues shall be sealed in this manner, unless otherwise stated.

WARNING! Risk of Fire or Explosion! DO NOT break silicone seals on slip sections. Use care when removing termination cap from slip pipe. If slip section seals are broken during removal of the termination cap, vent may leak.

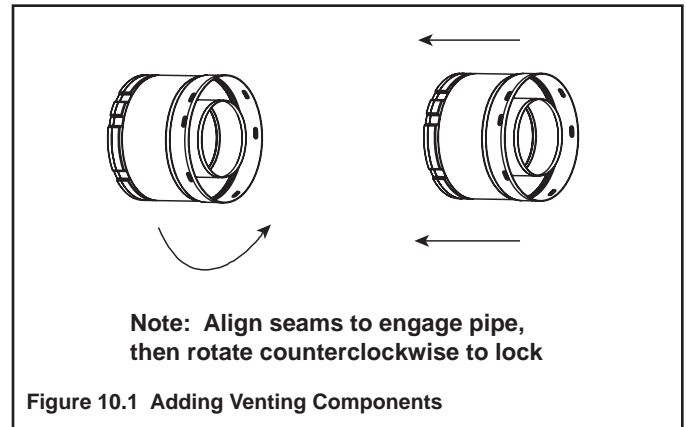


Figure 10.2 High Temperature Silicone Sealant

B. Assemble Slip Sections

- Slide the inner flue of the slip section into the inner flue of the pipe section and the outer flue of the slip section over the outer flue of the pipe section. See Figure 10.3.
- Slide together to the desired length.

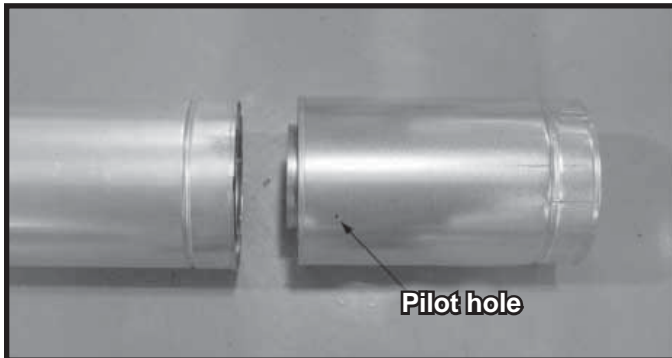


Figure 10.3 Slip Section Pilot Holes

- Maintain a 1-1/2 in. (38 mm) overlap between the slip section and the pipe section.
- Secure the pipe and slip section with two screws no longer than 1/2 in. (13 mm), using the pilot holes in the slip section. See Figure 10.4.

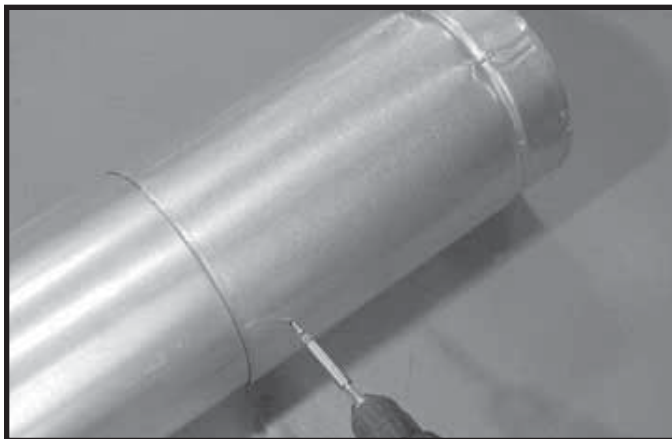


Figure 10.4 Screws into Slip Section

- Continue adding pipe as necessary following instructions in “Assembling Pipe Sections.”

NOTICE: If slip section is too long, the inner and outer flues of the slip section can be cut to the desired length.

NOTICE: When installing a vent system with an HRC termination cap, all pipe system joints shall be sealed using a silicone sealant with a minimum of 300°F continuous exposure rating.

- Apply a bead of silicone sealant inside the female outer pipe joint prior to joining sections.
- Only outer pipes are sealed, sealing the inner flue is not required.
- All unit collar, pipe, slip section, elbow and cap outer flues shall be sealed.

C. Secure The Vent Sections

- Vertical runs of pipe must be supported every 8 ft. (2.44 m).
- Horizontal sections must be supported every 5 feet (1.52 m).
- Vent supports or plumbers strap (spaced 120° apart) may be used to support. See figures 10.5 and 10.6.
- Wall shield firestops may be used to provide horizontal support.
- Ceiling firestops have tabs that may be used to provide vertical support.

WARNING! Risk of Fire, Explosion or Asphyxiation! Improper support may allow vent to sag and separate. Use vent run supports and connect vent sections per installation instructions. **DO NOT** allow vent to sag below connection point to appliance.

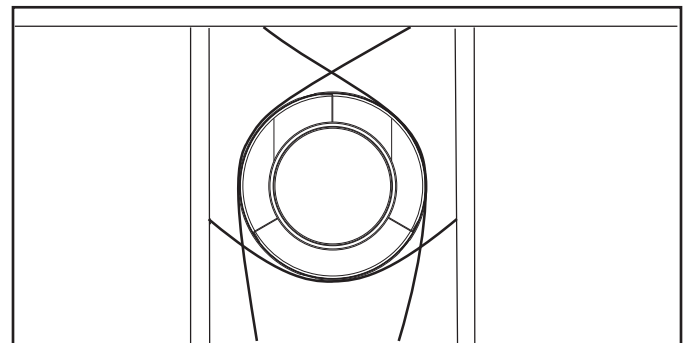


Figure 10.5 Securing Vertical Pipe Sections

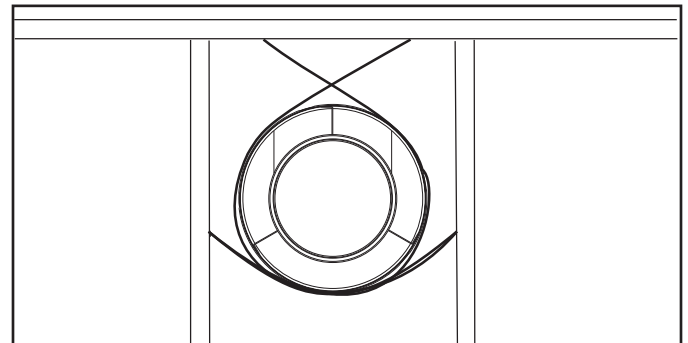


Figure 10.6 Securing Horizontal Pipe Sections

D. Disassemble Vent Sections

- Rotate either section (see Figure 10.7) so the seams on both pipe sections are aligned as shown in Figure 10.8.
- Pull carefully to separate the pieces of pipe.

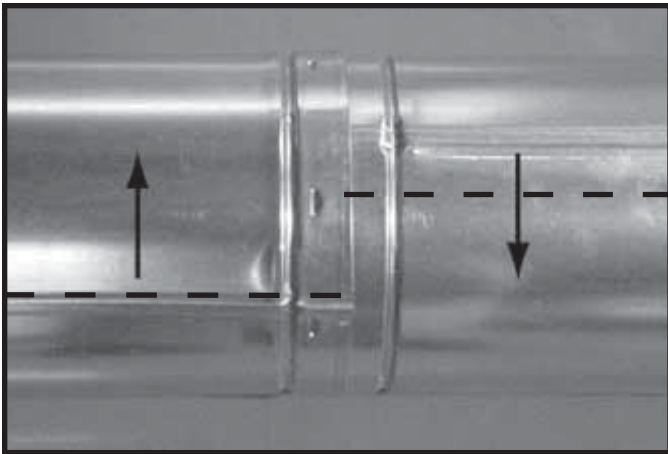


Figure 10.7 Rotate Seams for Disassembly

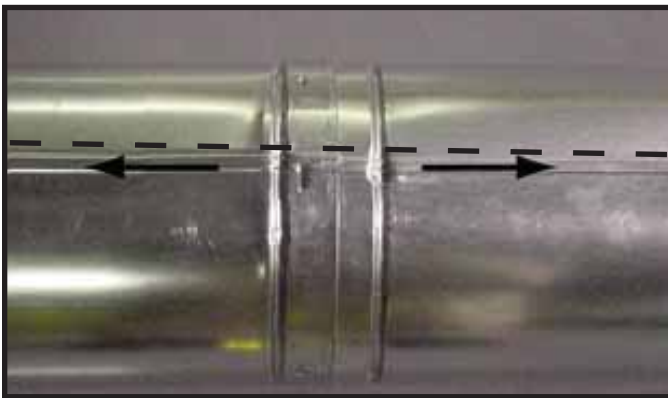


Figure 10.8 Align and Disassemble Vent Sections

E. Install Decorative Ceiling Components

A decorative ceiling thimble can be installed on a flat ceiling through which the vent passes. The decorative ceiling thimble is used to cover the firestop.

- Seal the gap between the vent pipe and firestop using silicone with a minimum of 300°F continuous exposure rating to prevent cold air infiltration.
- Install the decorative ceiling thimble by sliding it up to the ceiling and attaching it using the provided screws.

A decorative cathedral ceiling support box can be installed on a cathedral ceiling through which the vent passes.

- Use a plumb-bob to mark the center line of the venting system on the ceiling and drill a small hole through the ceiling and roof at this point. Locate the hole and mark the outline of the cathedral ceiling support box on the outside roof.
- Remove shingles or other roof covering as necessary to cut the rectangular hole for the support box. Cut the hole 1/8 in. (3 mm) larger than the support box outline.

- Lower the support box through the hole in the roof until its bottom is at least 2 in. (51 mm) below the ceiling (Figure 10.9).
- Level the support box both vertically and horizontally and temporarily tack it in place through the inside walls into the roof sheathing.
- Use tin snips to cut the support box from the top corners down to the roof line and fold the resulting flaps to the roof. See Figure 10.10.
- Nail the flaps to the roof AFTER running a bead of non hardening sealant between the flaps and the roof.

WARNING! Risk of Fire! Clean out ALL materials from inside the support box and complete the vertical vent run and termination.

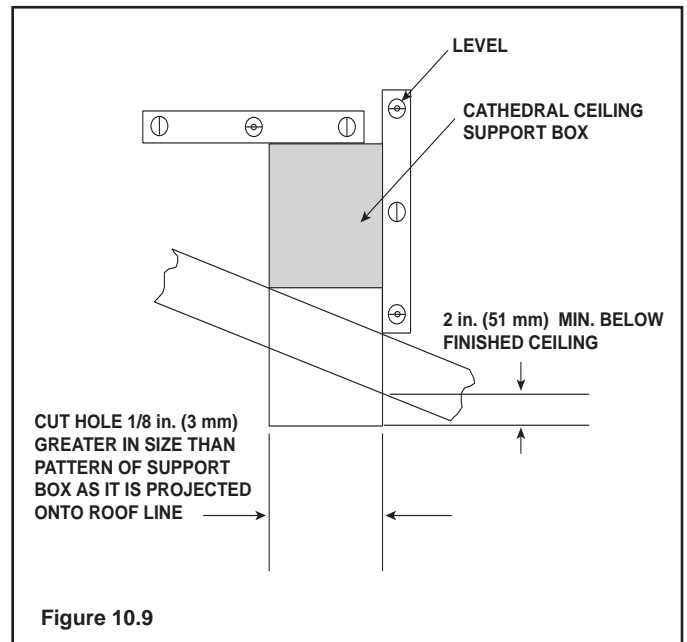


Figure 10.9

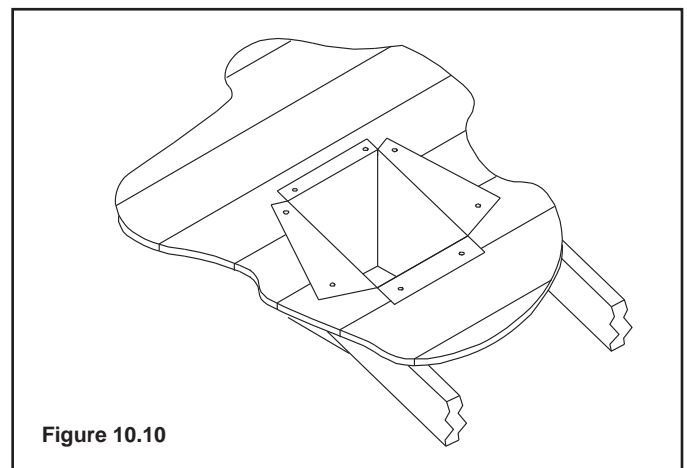
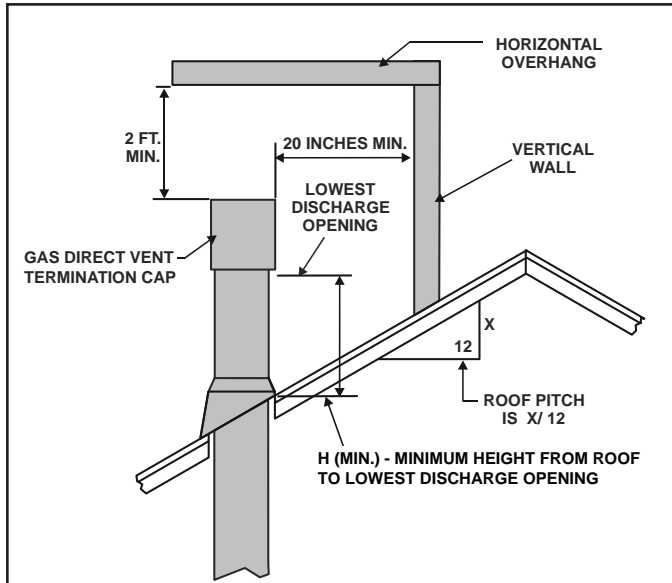


Figure 10.10

F. Install Metal Roof Flashing

- See minimum vent heights for various pitched roofs (Figure 10.11) to determine the length of pipe to extend through the roof.
- Slide the roof flashing over the pipe sections extending through the roof as shown in Figure 10.12.



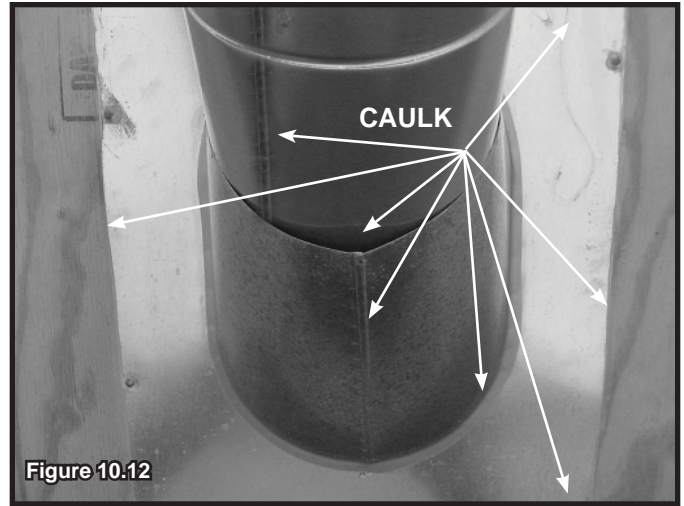
Roof Pitch	H (Min.) Ft.
Flat to 6/12.....	1.0*
Over 6/12 to 7/12.....	1.25*
Over 7/12 to 8/12.....	1.5*
Over 8/12 to 9/12.....	2.0*
Over 9/12 to 10/12.....	2.5
Over 10/12 to 11/12.....	3.25
Over 11/12 to 12/12.....	4.0
Over 12/12 to 14/12.....	5.0
Over 14/12 to 16/12.....	6.0
Over 16/12 to 18/12.....	7.0
Over 18/12 to 20/12.....	7.5
Over 20/12 to 21/12.....	8.0

* 3 foot minimum in snow regions

Figure 10.11 Minimum Height From Roof To Lowest Discharge Opening

NOTICE: Failure to properly caulk the roof flashing and pipe seams may permit entry of water.

- Caulk the gap between the roof flashing and the outside diameter of the pipe.
- Caulk the perimeter of the flashing where it contacts the roof surface. See Figure 10.12.
- Caulk the overlap seam of any exposed pipe sections that are located above the roof line.



G. Assemble and Install Storm Collar

CAUTION! Risk of Cuts, Abrasions or Flying Debris. Wear protective gloves and safety glasses during installation. Sheet metal edges are sharp.

- Connect both halves of the storm collar with two screws (see Figure 10.13).
- Wrap the storm collar around the exposed pipe section closest to the roof and align brackets. Insert a bolt (provided) through the brackets and tighten the nut to complete the storm collar assembly. Make sure the collar is tight against the pipe section.
- Slide the assembled storm collar down the pipe section until it rests on the roof flashing (see Figure 10.14).
- Caulk around the top of the storm collar (see Figure 10.19).

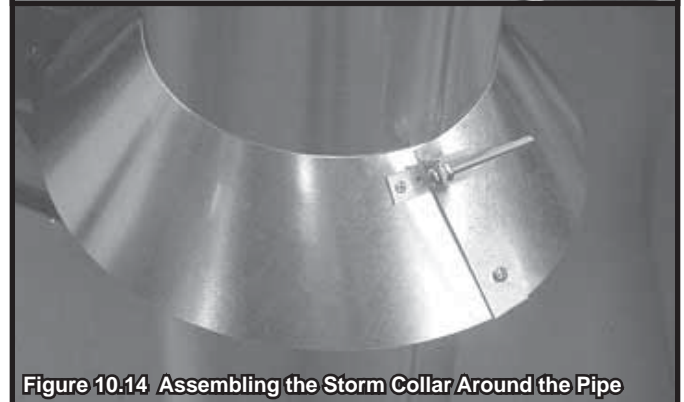
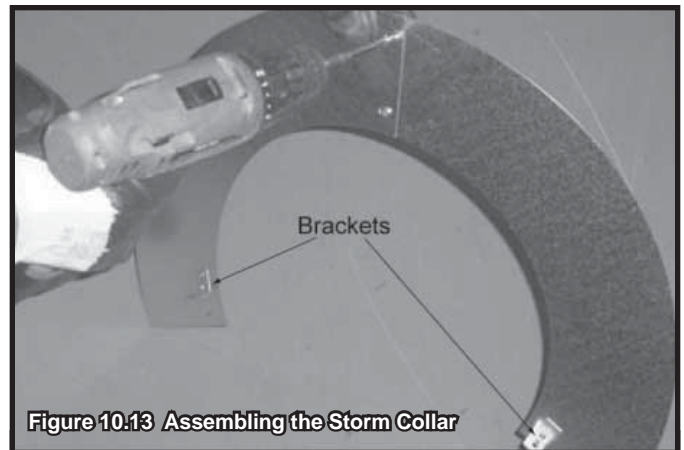


Figure 10.14 Assembling the Storm Collar Around the Pipe

H. Install Vertical Termination Cap

- Attach the vertical termination cap by sliding the inner collar of the cap into the inner flue of the pipe section while placing the outer collar of the cap over the outer flue of the pipe section.
- Secure the cap by driving three self-tapping screws (supplied) through the pilot holes in the outer collar of the cap into the outer flue of the pipe (see Figure 10.19).

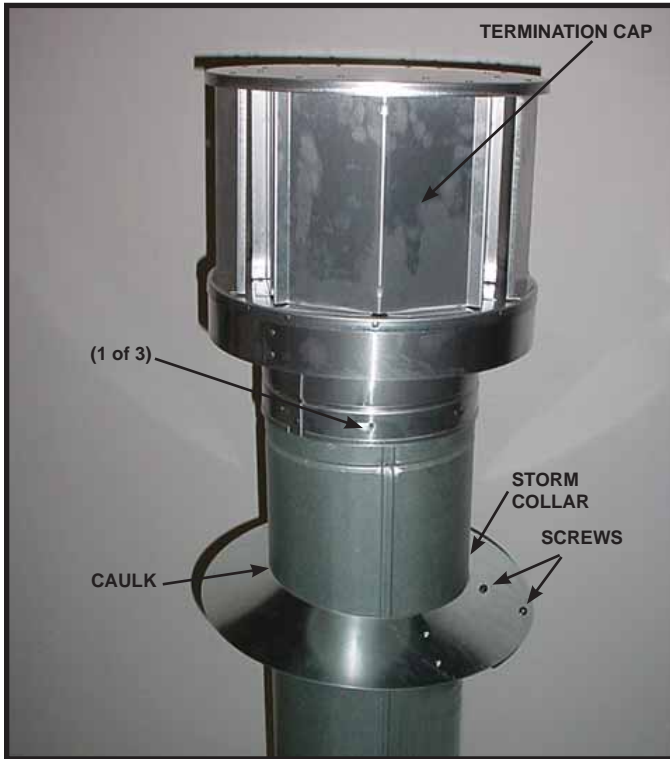


Figure 10.19

I. Heat Shield Requirements for Horizontal Termination

WARNING! Risk of Fire! To prevent overheating and fire, heat shields must extend through the entire wall thickness.

- **DO NOT** remove the heat shields attached to the wall shield firestop and the horizontal termination cap (shown in Figure 10.20).
- Heat shields must overlap 1-1/2 in. (38 mm) minimum.

There are two sections of the heat shield. One section is factory-attached to the wall shield firestop. The other section is factory-attached to the cap. See Figure 10.20.

If the wall thickness does not allow the required 1-1/2 in. (38 mm) heat shield overlap when installed, an extended heat shield must be used.

- If the wall thickness is less than 4 in./102 mm, the heat shields on the cap and wall shield firestop must be trimmed. A minimum 1-1/2 in. (38 mm) overlap **MUST** be maintained.
- Use an extended heat shield if the finished wall thickness is greater than 7-1/4 in. (184 mm).
- The extended heat shield may need to be cut to length maintaining sufficient length for a 1-1/2 in. (38 mm) overlap between heat shields.
- Attach the extended heat shield to either of the existing heat shields using the screws supplied with the extended heat shield. Refer to vent components diagrams in the back of this manual.
- Rest the small leg on the extended heat shield on top of the pipe section to properly space it from the pipe section.

Important Notice: Heat shields may not be field constructed.

J. Install Horizontal Termination Cap

WARNING! Risk of Fire! The telescoping flue section of the termination cap **MUST** be used when connecting vent.

- 1-1/2 (38 mm) minimum overlap of flue telescoping section is required.

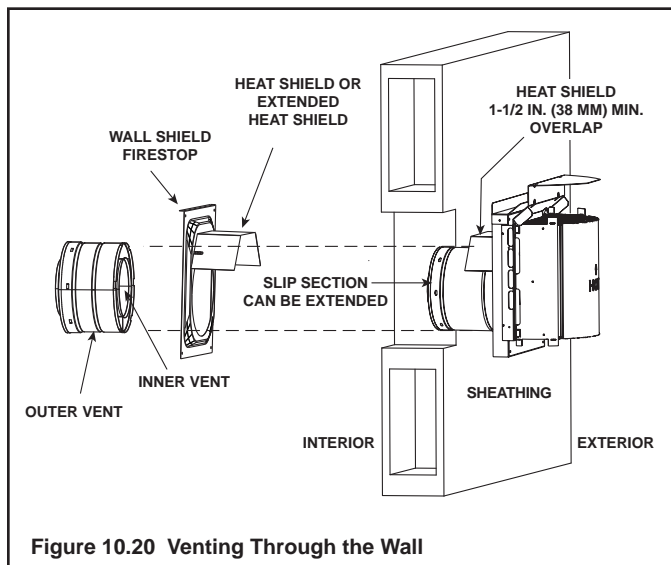
Failure to maintain overlap may cause overheating and fire.

- Vent termination must not be recessed in the wall. Siding may be brought to the edge of the cap base.
- Flash and seal as appropriate for siding material at outside edges of cap.
- When installing a horizontal termination cap, follow the cap location guidelines as prescribed by current **ANSI Z223.1** and **CAN/CGA-B149** installation codes and refer to Section 6 of this manual.

CAUTION! Risk of Burns! Local codes may require installation of a cap shield to prevent anything or anyone from touching the hot cap.

NOTICE: For certain exposures which require superior resistance to wind-driven rain penetration, a flashing kit and HRC caps are available. When penetrating a brick wall, a brick extension kit is available for framing the brick.

Note: When using termination caps with factory-supplied heat shield attached, no additional wall shield firestop is required on the exterior side of a combustible wall.



11 Gas Information

A. Fuel Conversion

- Make sure the appliance is compatible with available gas types.
- Conversions must be made by a qualified service technician using Hearth & Home Technologies specified and approved parts.

B. Gas Pressure

- Optimum appliance performance requires proper input pressures.
- Gas line sizing requirements will be determined in ANSI Z223.1 National Fuel Gas Code in the USA and CAN/CGA B149 in Canada.
- Pressure requirements are:

Gas Pressure	Natural Gas	Propane
Minimum inlet pressure	5.0 in. w.c.	11.0 in. w.c.
Maximum inlet pressure	10.0 in. w.c.	13.0 in. w.c.
Manifold pressure	3.5 in. w.c.	10.0 in. w.c.

WARNING! Risk of Fire or Explosion! High pressure will damage valve. Low pressure may cause explosion.

- Verify inlet pressures. Verify minimum pressures when other household gas appliances are operating.
- Install regulator upstream of valve if line pressure is greater than 1/2 psig.
- Valve pressure taps are accessible by removing the outer panel tray and glass assembly.



Figure 11.1. Valve Pressure Taps.

⚠ WARNING

Fire Risk.
Explosion Hazard.
High pressure will damage valve.

- Disconnect gas supply piping BEFORE pressure testing gas line at test pressures above 1/2 psig.
- Close the manual shutoff valve BEFORE pressure testing gas line at test pressures equal to or less than 1/2 psig.

Note: Have the gas supply line installed in accordance with local codes, if any. If not, follow ANSI 223.1. Installation should be done by a qualified installer approved and/or licensed as required by the locality. (In the Commonwealth of Massachusetts installation must be performed by a licensed plumber or gas fitter).

Note: A listed (and Commonwealth of Massachusetts approved) 1/2 in. (13 mm) T-handle manual shut-off valve and flexible gas connector are connected to the 1/2 in. (13 mm) control valve inlet.

- **If substituting for these components, please consult local codes for compliance.**

Note: This appliance does include a manual gas shutoff valve that is located in the valve compartment. This manual gas shutoff valve is accessible for service by removing the outer access panel tray or the base pan and burner assembly and inner access windows. Depending upon local code, an additional manual gas shutoff, in a readily accessible area may be required and located upstream from the appliance.

The lower access cover panel is removable if finishing material is not installed. See Figure 11.2.

If the finishing materials have been installed around the appliance opening, proceed as follows:

1. If already installed, carefully remove the front media and tray or granite or porcelain from the appliance and set aside.
2. Unplug the 3V transformer from the junction box. This will turn the power off to the appliance.
3. Turn the gas shutoff handle to the "OFF" position to shut off the gas supply.
4. Remove the glass assembly from the appliance by unlatching the two bottom spring latches and then pulling the bottom of the glass assembly toward you until it clears the glass latch tabs. Hold the top of the glass frame and gently lower the glass assembly down until it rests on the side glass supports. Tilt the top of the glass out toward you and remove. See Section 14.H.
5. Remove any interior media, granite or porcelain from the unit if already installed.
6. There are three access windows located on the interior of the firebox bottom. See Figure 11.1. Remove screws and plate to access the manual shutoff valve included with this fireplace.

To access unit through the lower bottom windows:

1. Remove the glass rock media or the porcelain from the interior firebox.

2. Remove the base pan. It is attached with 10 screws to the interior firebox bottom and with 12 screws to the burner assembly. If your appliance is a model that has the glass rock media, you must also remove the pilot shield cover at this time. See Figure 11.2 and Figure 11.3.
3. Remove the two screws securing the burner to the firebox sides and disengage burner from over orifice. Remove burner. See Figure 11.3.
4. Remove access panel covers or glass windows, along with gaskets. Gaskets may be fragile. Handle with care. See Figure 11.2.

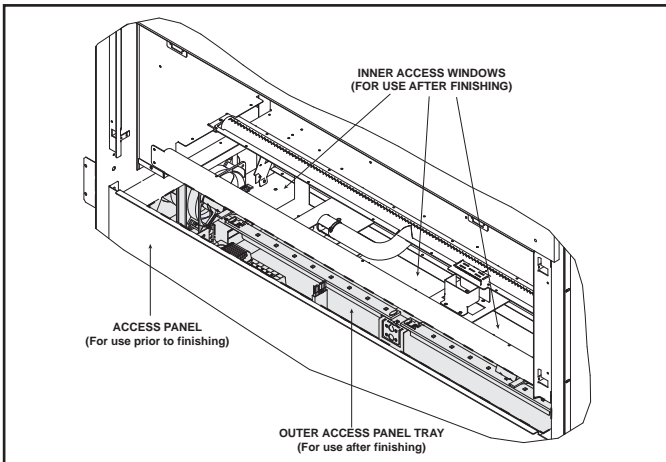


Figure 11.2 Gas and Electrical Access

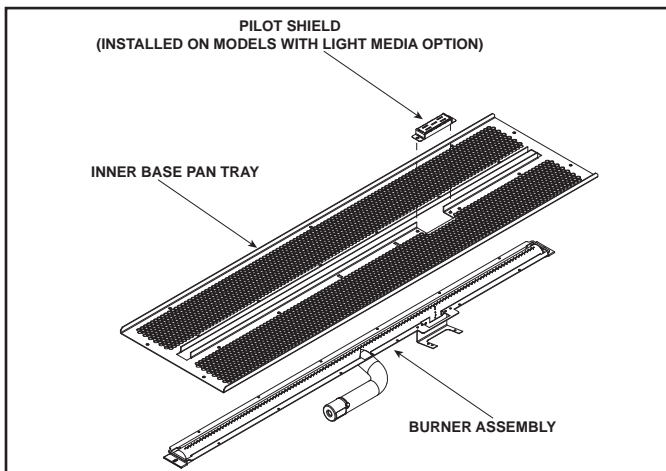


Figure 11.3. Base Pan with Burner and Pilot Cover

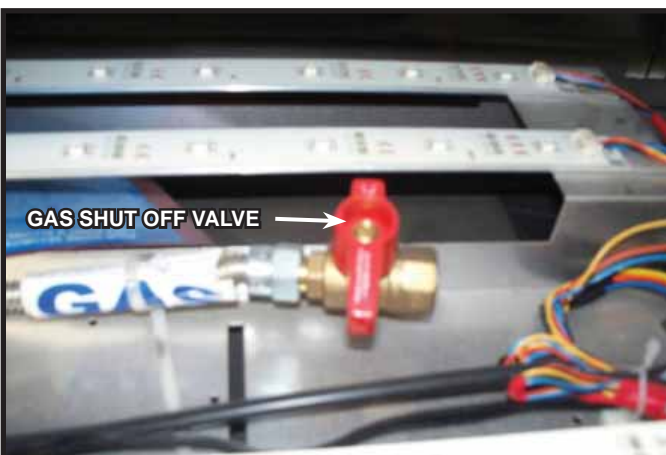


Figure 11.4 Gas Fitting Access

C. Gas Connection

- Refer to Reference Section 16 for location of gas line access in appliance.
- Gas line may be run through either side of appliance.
- The gap between supply piping and gas access hole may be caulked with caulk with a minimum of 300°F continuous exposure rating or stuffed with non-combustible, unfaced insulation to prevent cold air infiltration.
- Ensure that gas line does not come in contact with outer wrap of the appliance. Follow local codes.
- Pipe incoming gas line into valve compartment.
- Connect incoming gas line to the 1/2 in. (13 mm) connection on manual shutoff valve.

WARNING! Risk of Fire or Explosion! Support control when attaching pipe to prevent bending gas line.

- A small amount of air will be in the gas supply lines.

WARNING! Risk of Fire or Explosion! Gas build-up during line purge could ignite.

- Purge should be performed by qualified service technician.
- Ensure adequate ventilation.
- Ensure there are no ignition sources such as sparks or open flames.

Light the appliance. It will take a short time for air to purge from lines. When purging is complete the appliance will light and operate normally.

WARNING! Risk of Fire, Explosion or Asphyxiation! Check all fittings and connections with a non-corrosive commercially available leak-check solution. **DO NOT** use open flame. Fittings and connections could have loosened during shipping and handling.

WARNING! Risk of Fire! DO NOT change valve settings. This valve has been preset at the factory.

D. High Altitude Installations

NOTICE: If the heating value of the gas has been reduced, these rules do not apply. Check with your local gas utility or authorities having jurisdiction.

When installing above 2000 feet elevation:

- In the USA: Reduce burner orifice 4% for each 1000 feet above 2000 feet.
- In CANADA: Reduce burner orifice 10% for elevations between 2000 feet and 4500 feet. Above 4500 feet, consult local gas utility.

12 Electrical Information

A. Wiring Requirements

NOTICE: This appliance must be electrically wired and grounded in accordance with local codes or, in the absence of local codes, with **National Electric Code ANSI/NFPA 70-latest edition** or the **Canadian Electric Code CSA C22.1**.

- Wire the appliance junction box to 110-120 VAC. This is required for proper operation of the appliance.
- A 110-120 VAC circuit for this product must be protected with ground-fault circuit-interrupter protection, in compliance with the applicable electrical codes, when it is installed in locations such as in bathrooms or near sinks.
- Low voltage and 110 VAC voltage cannot be shared within the same wall box.

WARNING! Risk of Shock or Explosion! DO NOT wire 110V to the valve or to the appliance wall switch. Incorrect wiring will damage controls.

B. IntelliFire Ignition System Wiring

- Wire the appliance junction box to 110 VAC for proper operation of the appliance.

WARNING! Risk of Shock or Explosion! DO NOT wire IPI controlled appliance junction box to a switched circuit. Incorrect wiring will override IPI safety lockout.

- Refer to Figure 12.5, IntelliFire Pilot Ignition (IPI) Wiring Diagram.
- This appliance is equipped with an IntelliFire control valve which operates on a 3 volt system.
- Plug the 3-volt AC transformer into the appliance junction box to supply power to the appliance.

C. Optional Accessories Requirements

- This appliance ships standard with a wall switch and may use a remote control.

Wiring for optional Hearth & Home Technologies approved accessories should be done now to avoid reconstruction. Follow instructions that come with those accessories.

Optional Remote Control Receiver

The junction box, control module, light controller and wall switch receiver can be accessed thru the air space between the firebox front and the lower-front finishing cover panel. The decorative front and glass assembly must be removed to access these components. See Figure 12.1.

Note: If the fan is moved from one side to the other, the junction box must also move. See appropriate configuration in relation to the valve in Figure 12.3. The valve does not move.

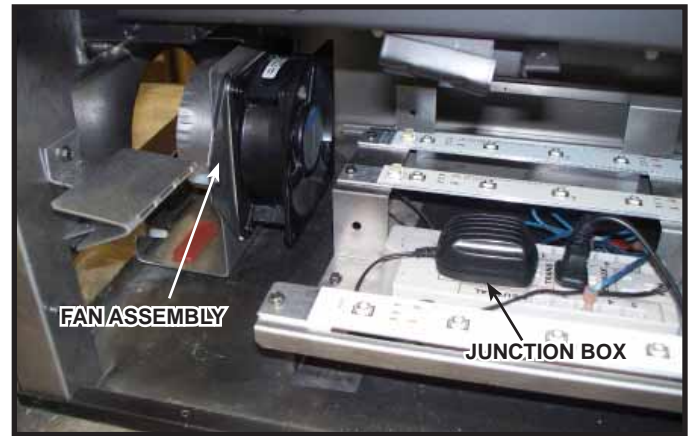


Figure 12.1. Valve Cavity (Lower Access Panel Removed)

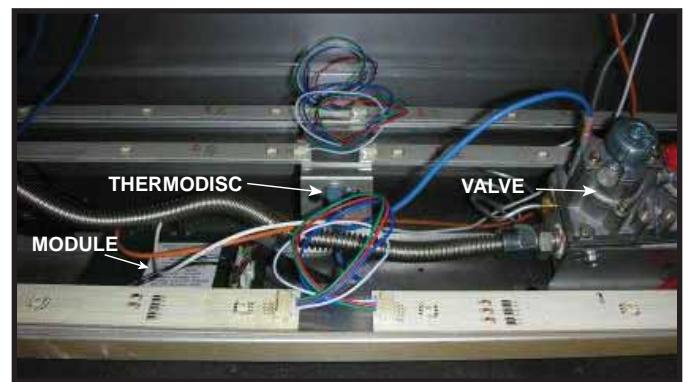


Figure 12.2. Valve Cavity

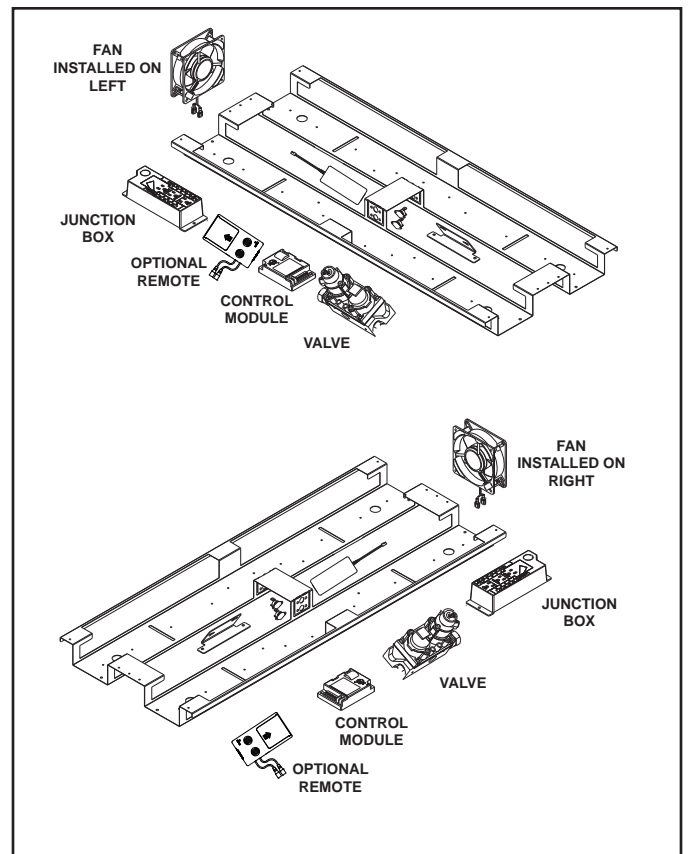


Figure 12.3. Controls Location Diagram

Optional Remote Control Receiver Location

A battery back up is not compatible with the RED40 or RED40ST and may not be installed.

CAUTION! DO NOT install battery back up. Battery back up is not compatible with this appliance. Battery pack and batteries will not withstand appliance temperatures.

An optional remote control receiver is available. The optional remote control receiver must be installed in the specific location under the heat shield as shown in Figure 12.4.



Figure 12.4. Required Location of Optional Remote Control Receiver. (Heat shield removed)

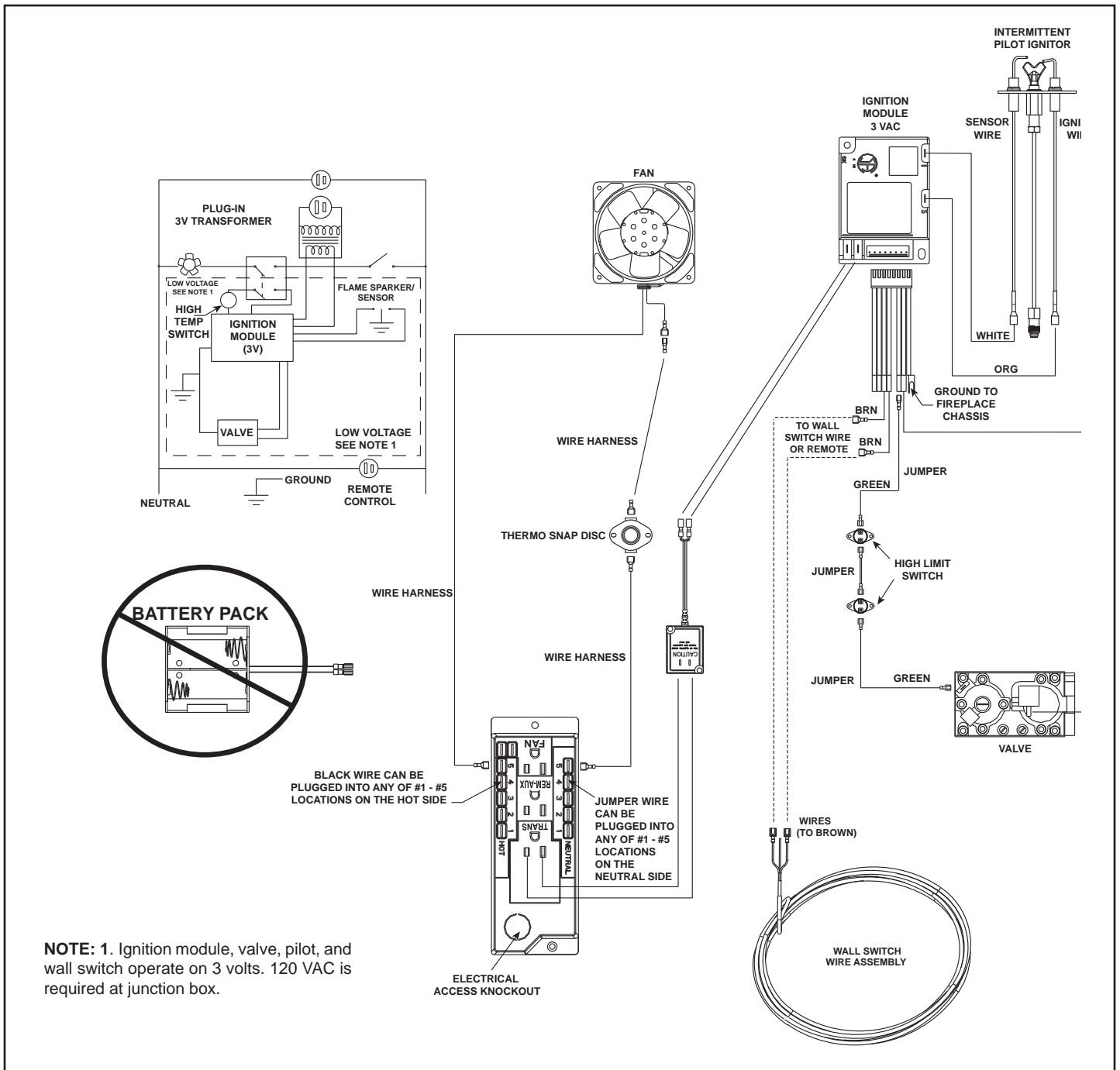


Figure 12.5 IntelliFire Pilot Ignition (IPI) Wiring Diagram with Wall Switch or Remote

D. Optional LED Lighting Circuit

For models with LED lighting option only.

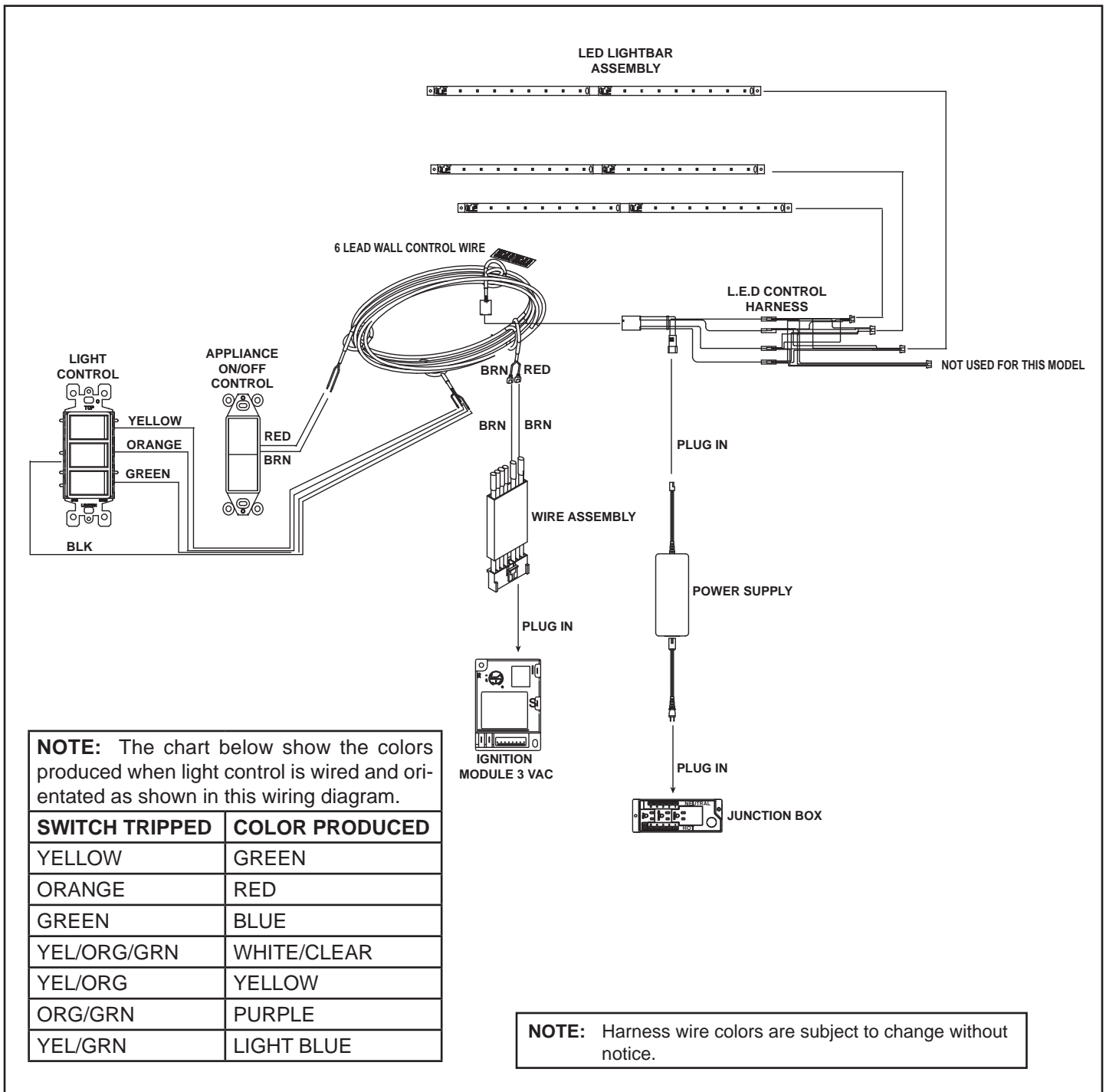


Figure 12.6 LED Wiring Diagram

E. Electrical Service and Repair

WARNING! Risk of Shock! Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

WARNING! Risk of Shock! Replace damaged wire with type 105° C rated wire. Wire must have high temperature insulation.

F. Junction Box Installation

WARNING! Risk of Shock! Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

WARNING! Risk of Shock! Replace damaged wire with type 105° C rated wire. Wire must have high temperature insulation.

1. Remove the one screw that secures the junction box to the control tray panel.
2. Route the wire through the strain relief in the outer wrap and down through the knockout located on top side of the junction box. See Figure 12.7.
3. Make the connection inside the junction box to the 120V wire. Connect green to the ground nut, black to black, and white to white.
4. To reattach the junction box, insert one end of the junction box in the slot provided and securely screw the other end of the junction box to the control tray panel.

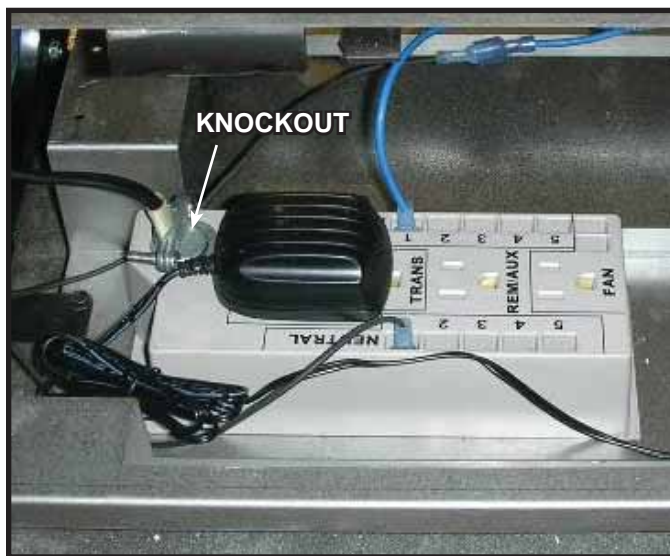


Figure 12.7 Junction Box Detail

In the event that the junction box may need to be accessed or installed after finish methods have been applied, access is possible by removing the valve assembly (See Figure 11.2).

G. Active Convection Blower Replacement

WARNING! Risk of Shock! Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

WARNING! Risk of Shock! Replace damaged wire with type 105° C rated wire. Wire must have high temperature insulation.

1. Remove any interior enhancement kit(s), such as glass rock media, granite or porcelain, that have been already installed in the appliance.
2. Remove pilot shield as shown in Figure 12.8.



Figure 12.8 Removing Pilot Shield

3. Remove screws from base pan and lift base pan up and out of appliance. Set aside. See Figure 12.9 and Figure 12.10.



Figure 12.9 Removing Screws from Base Pan.



Figure 12.10 Lifting Base Pan Up and Out.

4. Remove screws from each end of burner assembly. Pull burner out of appliance. Set aside.

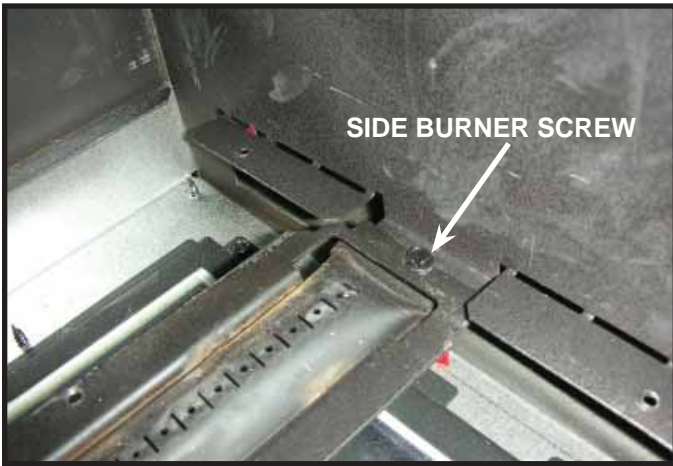


Figure 12.11. Side Burner Screw.

5. Remove left or right side glass pane frame, depending on placement of blower, from bottom of firebox. Remove glass pane and gaskets. Gaskets may have become fragile from heat exposure. Handle with care. At this point, blower and other components located under the firebox are accessible.

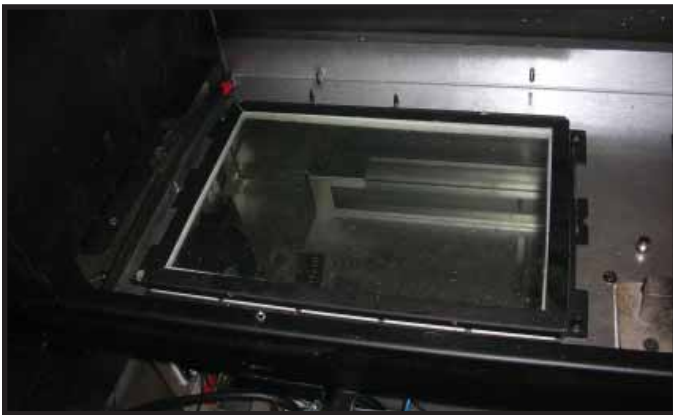


Figure 12.12. Glass Pane Frame.

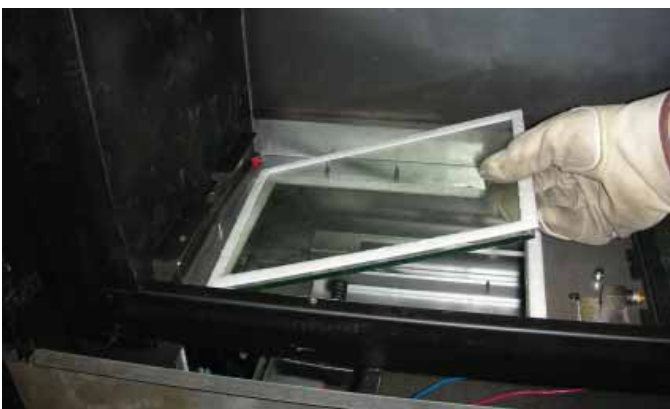


Figure 12.13. Removing Glass Pane Frame.

6. Locate the fan mount fastener on either the left or right side of the appliance. See Figure 12.14. Remove fastener.



Figure 12.14. Fan Mount Fastener Location.

7. Slide fan forward slightly to release it from the fan mount housing.
8. Locate blower power wires and unplug them from their locations. Note these positions for reinstallation.
9. Remove blower from appliance. See Figure 12.15.



Figure 12.15. Remove Blower from Appliance.

10. Remove mounting plate from blower by removing the four screws that hold the blower to the plate. Save the gasket for use with the new blower. See Figure 12.16 and Figure 12.17.



Figure 12.16. Remove Mounting Plate



Figure 12.17. Remove Mounting Plate

11. Attach new blower to mounting plate by fastening the four screws in the appropriate locations. The side of the blower with the label on it must face toward the inside of the appliance. This is the direction of the air flow. See Figure 12.18.



Figure 12.18. Removed Mounting Plate

12. To install new blower back into appliance, reverse the removal procedure. Install blower assembly with the tab toward the rear of the appliance. See Figure 12.19. This tab must insert into slot on blower housing inside the appliance as shown in Figure 12.20.

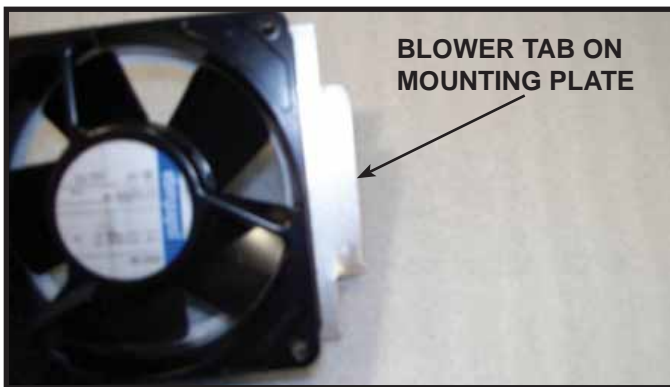


Figure 12.19. Blower Tab Toward Rear

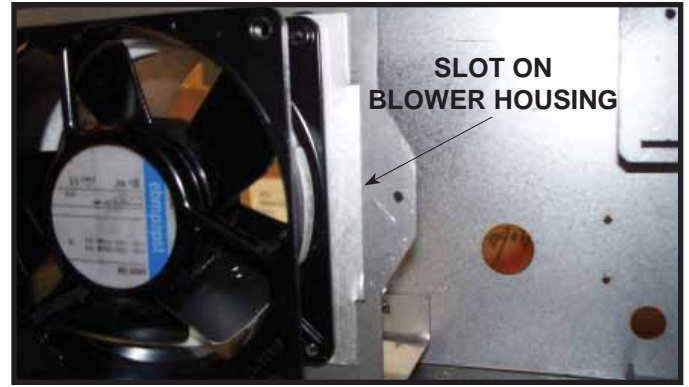


Figure 12.20. Blower Tab Inserted into Slot on Blower Housing

13 Finishing

A. Splatter Guard

The splatter guard is a piece of corrugated material used to protect the appliance during the installation process before finishing work on the whole hearth is complete. A splatter guard is factory installed on RED40 and RED40ST models. Splatter guards must be removed before appliance is fired.

WARNING! Risk of Fire! Remove the splatter guard before lighting the appliance. Shut off gas to the appliance when the splatter guard is in place to prevent accidental operation.

B. Framing and Finishing Instructions

WARNING! Risk of Fire! Comply with all minimum clearances to combustibles as specified. Framing closer than the minimums listed must be constructed entirely of non-combustible materials (i.e., steel studs, concrete board, etc.).

Finishing Instructions

It is important to follow the framing and finishing instructions to ensure proper placement of fireplace into the surrounding framing/finishing materials.

Wall sheathing materials 1/2 in. thick are specified in this installation manual to properly align with the factory-installed non-combustible material.

WARNING! Risk of Fire! DO NOT remove the factory-installed non-combustible board or cover it with combustible material, such as:

- Drywall (gypsum board)
- Plywood
- Materials that do not meet the ASTM E 136 Non-combustibility standard (below).

Removal of factory-installed, non-combustible board and/or use of materials not meeting the ASTM E 136 standard may cause fire.

Non-Combustible Materials Specification

Material which will not ignite and burn. Such materials are those consisting entirely of steel, iron, brick, tile, concrete, slate, glass or plasters, or any combination thereof.

Materials that are reported as passing **ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 °C** and **UL763** shall be considered non-combustible materials.

WARNING! Risk of Fire! Maintain specified air space clearances to combustibles.

Inadequate air space may cause overheating and fire.

Ensure that the one inch back clearance and one inch side clearances are maintained.

WARNING! Risk of Fire! DO NOT use screws longer than two inches when attaching finishing materials to non-combustible material. Screws longer than two inches will compromise clearance and may cause overheating and fire.

CAUTION! Risk of Glass Damage and Cuts! DO NOT drill or install any type of screw or fastener into the lower cover panel. Sharp screw or fastener tips may penetrate and break the glass or cause cuts.

The RED40 comes standard with a mesh front. The final fireplace installation can be accomplished by either the “overlap” or “inside-fit” method. Reference Section 13.C regarding installation details associated with the Inside and Overlap Fit methods.

If the final fireplace installation uses the Overlap Method, wall sheathing material 1/2 in thick is specified and can be installed tight to the side finishing flanges and factory-supplied non-combustible board. If the final fireplace installation uses the Inside-Fit Method, additional clearance must be maintained between combustible 1/2 in. thick wall sheathing material and the side finishing flanges. See Section 13.D regarding installation details associated with the Inside and Overlap Fit methods and specified additional non-combustible materials required.

When finishing the wall around the fireplace, it is critical that wall sheathing be fastened properly. Wall sheathing fasteners, such as screws or nails, are not permitted in some locations. See Figure 13.2. It is acceptable to pre-drill holes and use self-tapped screws in the factory-installed non-combustible board which may be used to lathe (a backer for tile, marble, etc.) Screws being installed through the factory-installed non-combustible board should be self-tapping type with a maximum length of 2 inches. See Figure 13.2. Do not drill or install screws which may penetrate the lower cover panel as this will restrict required access to the glass and lower control chamber. See Figure 13.1.

The appliance is designed to mate with 1/2 in. wall sheathing materials such as drywall, plywood, wood composites, or non-combustible materials. The type of material used depends whether the installation is an Inside or Overlap Fit method. Reference Section 13.C regarding installation details associated with the Inside an Overlap Fit methods.

Verify that the lower cover panel is installed correctly, and that there are no screws used to attach drywall to the panel.

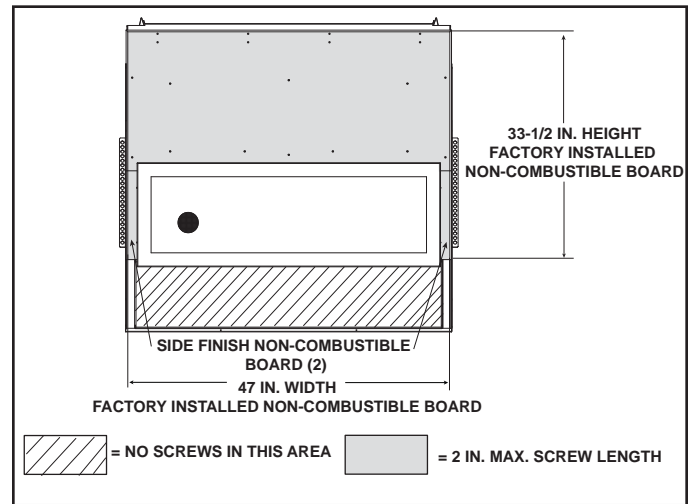


Figure 13.1 Finishing Details

Note: It is acceptable to use a high temperature silicone sealant to adhere drywall to lower cover panel.

Finish and Sealing Joints

All joints between the finished wall sheathing and the appliance must be sealed with non-combustible materials. Sealants, such as caulk or mastic used to seal the gap between the wall and the fireplace, should be rated at a minimum continuous exposure to 300°F.

Finishing Around Opening with Gypsum Wallboard

Gypsum wallboard (drywall) joints adjacent to the fireplace opening, including the non-combustible board on the appliance, require special attention to minimize cracking. When installing gypsum wallboard around the fireplace, install the hole for the fireplace opening in a single wallboard sheet, if possible. This will minimize the joints adjacent to the fireplace opening.

Tape wall board joints around the fireplace opening with fiberglass-mesh tape. It will provide a more crack-resistant joint than paper tape. Fill, smooth and finish wall joints with chemically setting-type joint compound. It will provide a more crack-resistant joint than air-drying light-weight compound.

Painting

If desired finishing includes a painted wall, 100% acrylic latex with compatible primer is recommended around this appliance. Oil-based or standard acrylic paints may discolor due to heat exposure.

C. Mantel and Wall Projections

WARNING! Risk of Fire! Comply with all minimum clearances to combustibles as specified. Framing closer than the minimums listed must be constructed entirely of noncombustible materials (i.e., steel studs, concrete board, etc.)

Note: For non-combustible fireplace finish material (marble, stone, etc) specifications refer to Figure 13.10 and Figure 13.11.

Combustible Mantels

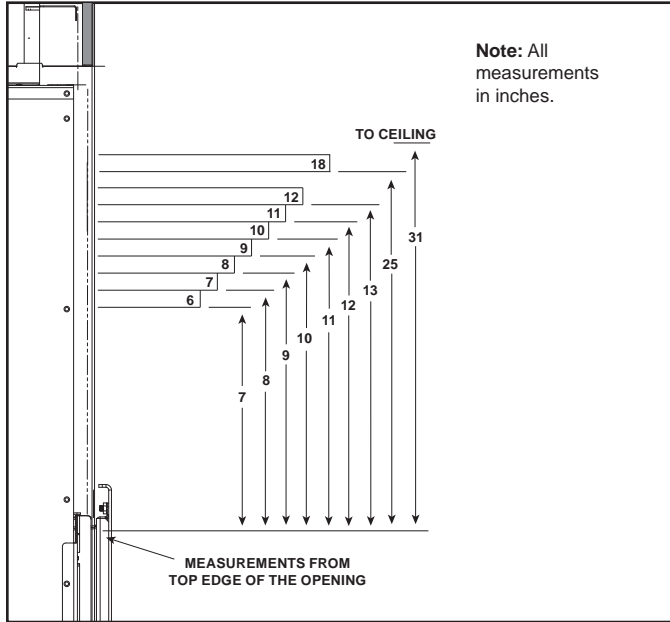


Figure 13.2 Minimum Vertical and Maximum Horizontal Dimensions of Combustibles

Note: For non-combustible fireplace finish material (marble, stone, etc) specifications refer to Section 13.

Non-Combustible Mantels

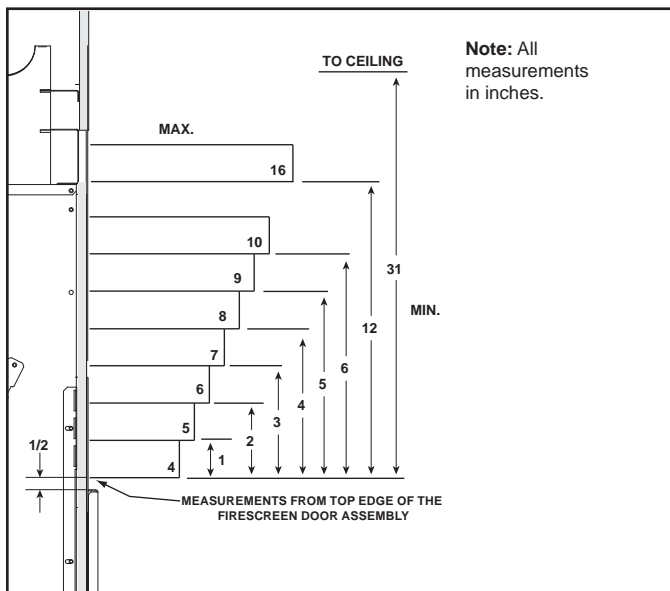


Figure 13.3 Minimum Vertical and Maximum Horizontal Dimensions of Non-Combustibles

Combustible Mantel Legs Or Wall Projections Extending Past The Face Of The Fireplace

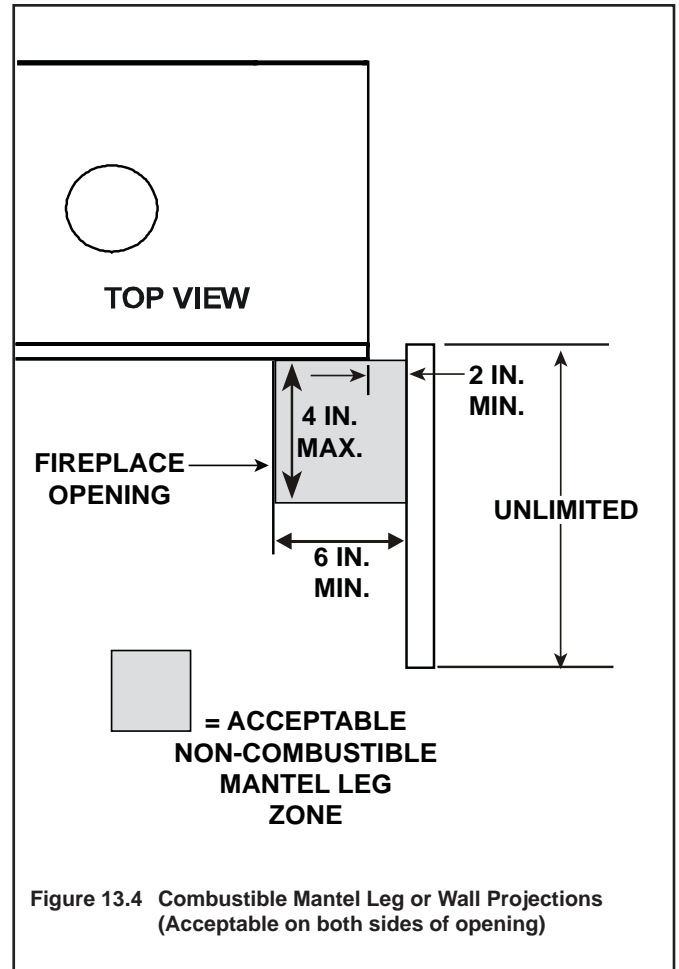


Figure 13.4 Combustible Mantel Leg or Wall Projections (Acceptable on both sides of opening)

D. Facing Material

- Facing and/or finishing materials must not interfere with air flow through louvers, operation of louvers or doors, or access for service.
- Facing and/or finishing materials must never overhang into the glass opening.
- Observe all clearances when applying combustible materials.

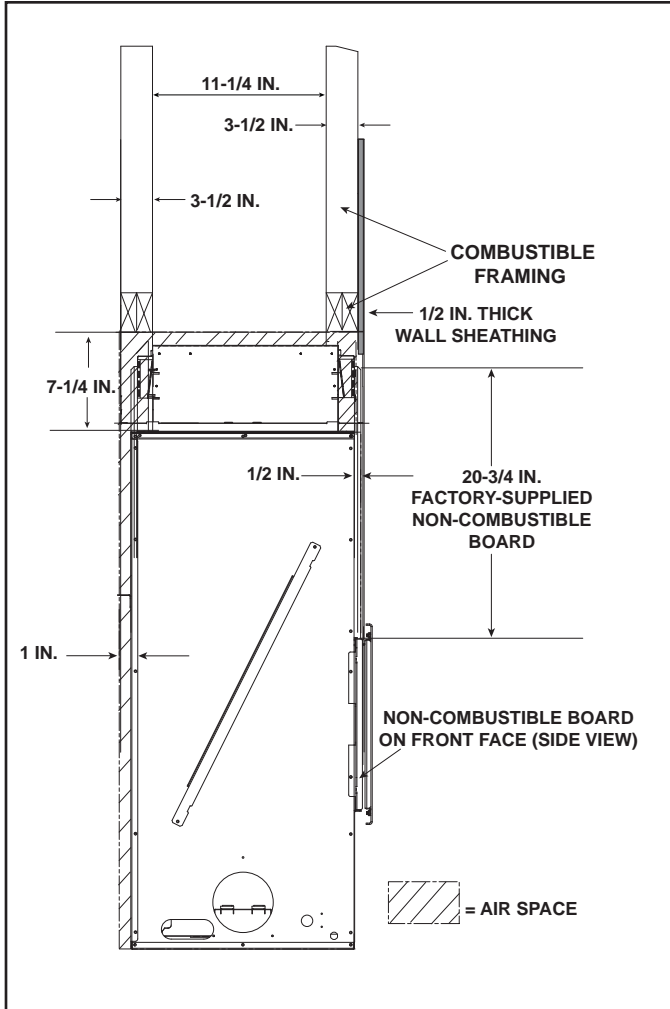


Figure 13.5 Framing and Framing Materials-RED40

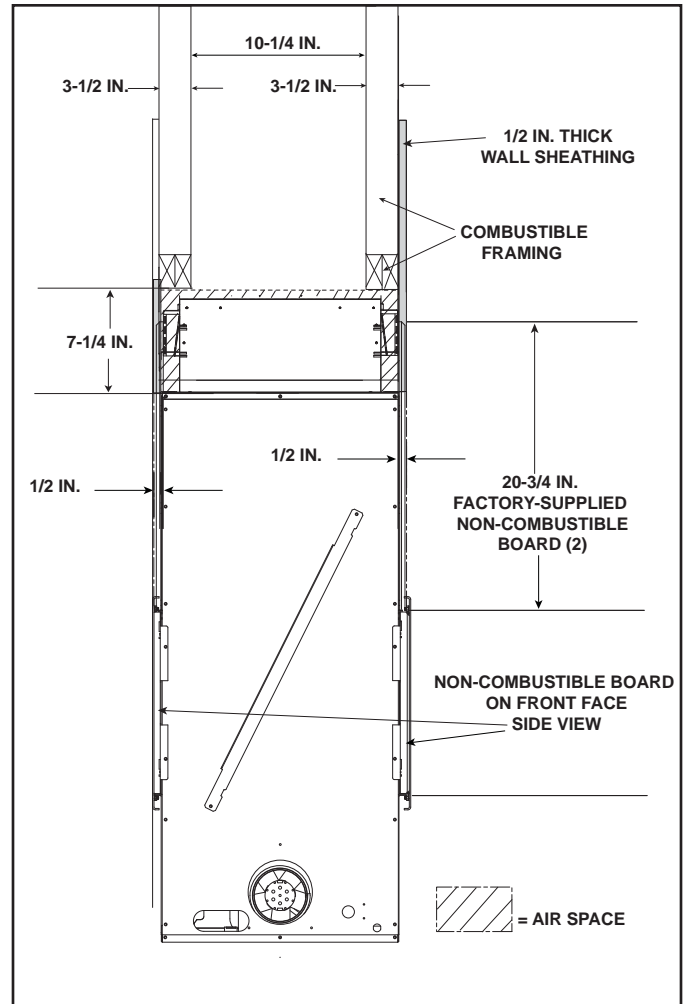


Figure 13.6 Framing and Framing Materials-RED40ST

WARNING! Risk of Fire! DO NOT apply combustible materials beyond the minimum clearances. Comply with all minimum clearances to combustibles as specified in this manual. Overlapping materials could ignite and will interfere with proper operation of doors and louvers.

WARNING! Risk of Fire! DO NOT install drywall or other combustible materials directly onto the factory-installed non-combustible board. Overlapping materials could ignite.

Decorative facing material thickness is measured from the face of the factory-installed non-combustible board. See Figure 13.5 and Figure 13.6.

The mesh front can be installed such that it overlaps non-combustible materials up to 1 in. thick. See Figure 13.7 and Figure 13.8.

Refer to Section 1.E and 1.F of this manual for definition and qualifications and definition of non-combustible and combustible materials.

Specific requirements for each method if installation are described below and on the following pages of this section.

Non-Combustible Finish Materials

0 - 1 inch thickness-Overlap Fit Method

The mesh front is designed to overlap finish materials 0 inches to 1 inch thick. See Figure 13.7.

NOTICE: This one inch maximum not only includes the decorative finish materials (marble, tile, slate, etc) but also the thin set, lath and adhesive used to attach the decorative finish material.

The non-combustible finish material can be installed up to the 16 inch (height) by 43 inch (width) fireplace opening.

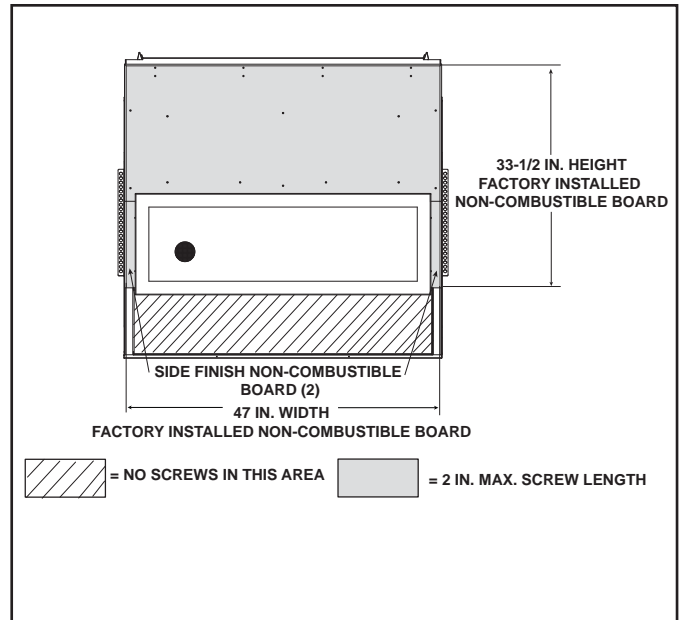


Figure 13.8 Non-Combustible Finish Material Diagram for 0-1 Inch Thick Overlap Fit Method

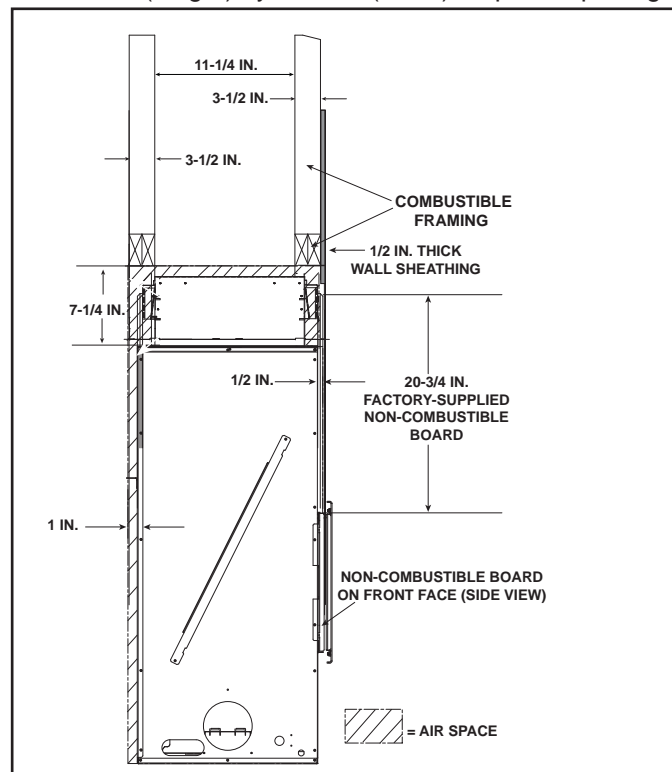


Figure 13.7 Overlap Fit Method

Non-Combustible Finish Materials
0 Inches to 4 Inches Thick Inside Fit Method

The mesh decorative front is approved for inside fit applications. Non-combustible finishing materials up to 4 inches thick can be installed around the Mesh front (left, right, top, and bottom). The inside fit method requires an additional 2 in. of 1/2 in. thick non-combustible building material (not supplied with fireplace) to be installed on the left and right sides flush with the factory installed non-combustible board.

Ensure that no non-combustible finish materials are installed within 1-1/2 inches of top and bottom and 1-3/16 inches from right and left sides of fireplace opening. This will ensure adequate clearance for required mesh front. See Figure 13.11.

Refer to Section 1.E and 1.F of this manual for definition and qualifications and definition of non-combustible and combustible materials.

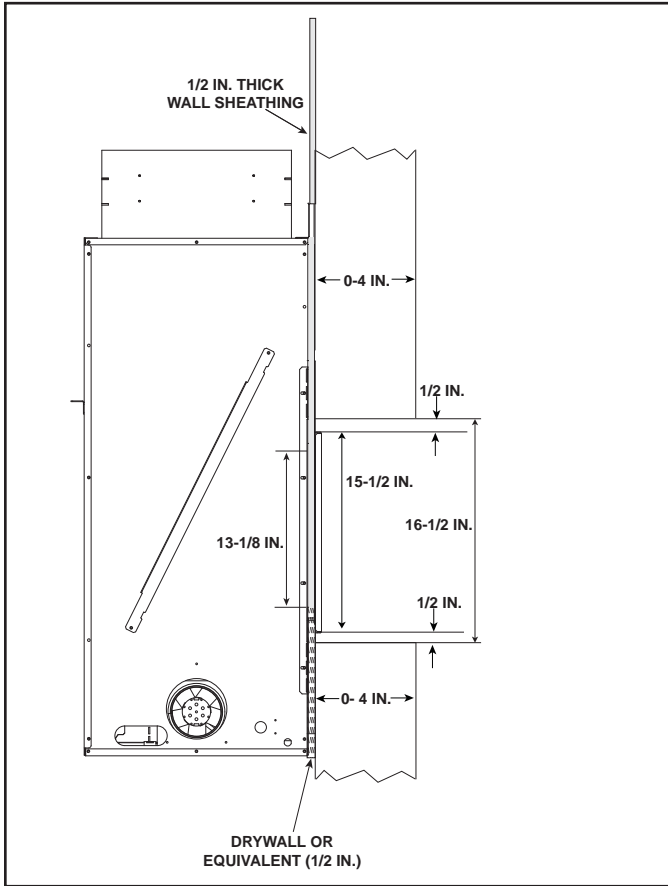


Figure 13.9 Inside Fit Method

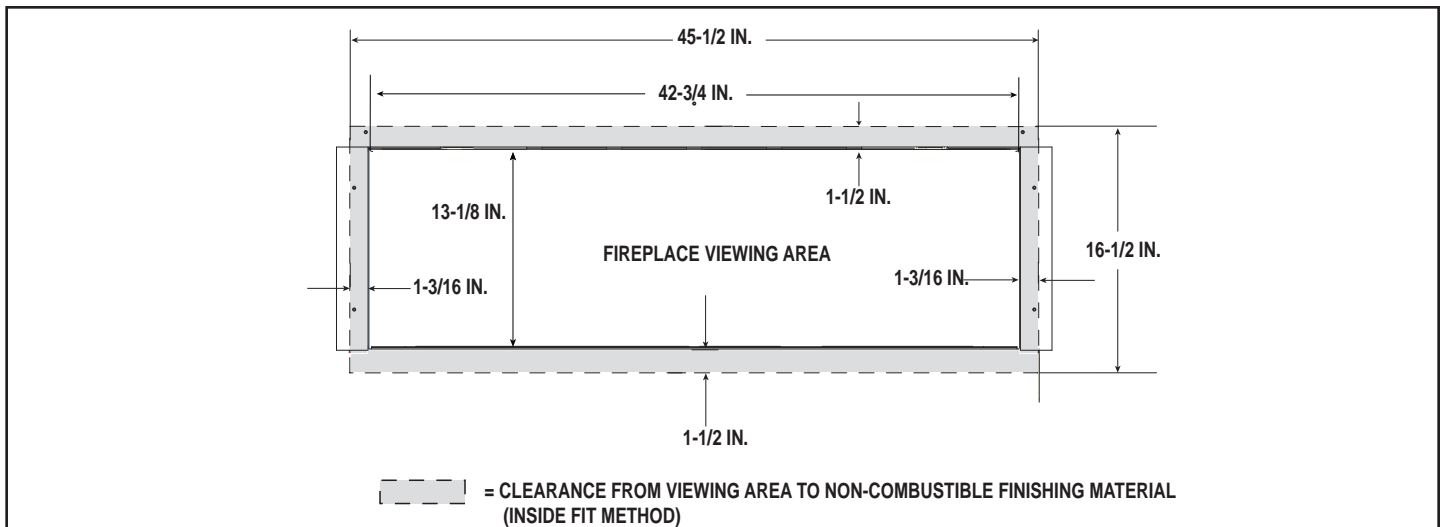


Figure 13.10 Noncombustible Surface Finishing Material 0-4 Inches Thick-Inside Fit Method

E. Mesh Fronts

WARNING! Risk of Burns! A decorative front is required for this model. DO NOT operate this appliance without a decorative front in place.

Only doors certified for use with this appliance model may be used. Contact your dealer for a list of doors that may be used.

A mesh front is included with the RED40 and RED40ST.

To attach the mesh front to the appliance, use the two mesh brackets. These brackets are mounted to the underside of the top of the appliance viewing area and are fastened to the appliance by two screws on each bracket. See Figure 13.11. There are two hanging tabs on the back of the mesh front assembly that are bent upward. Engage these tabs in the slot of the brackets.

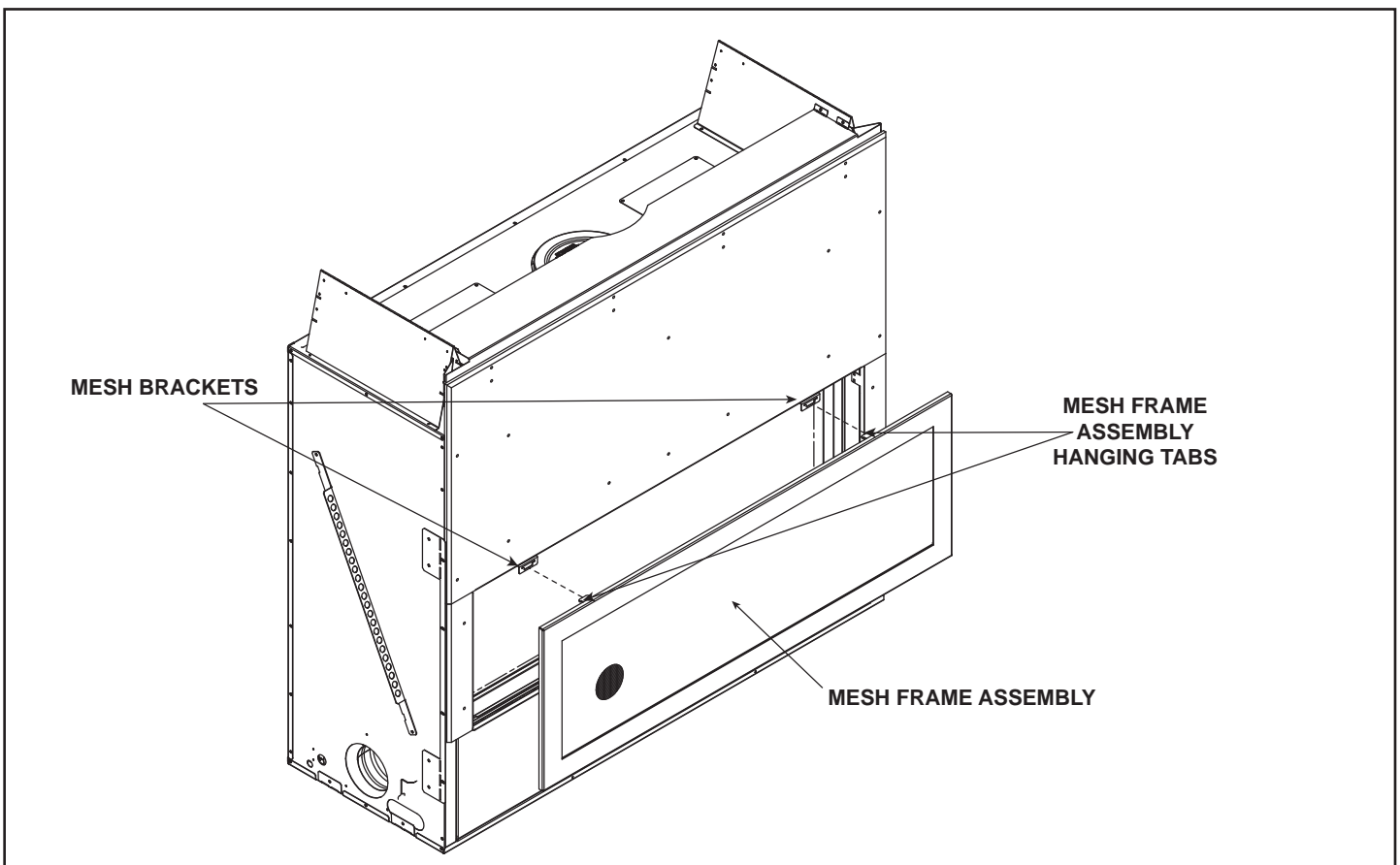


Figure 13.11. Mesh Front Installation.

14 Appliance Setup

A. Remove Fixed Glass Assembly

See Section 14.H.

B. Remove the Shipping Materials

Remove shipping materials from inside or underneath the firebox. Verify all components are with the fireplace.

C. Clean the Appliance

Clean/vacuum any sawdust that may have accumulated inside the firebox or underneath in the control cavity.

D. Accessories

Install approved accessories per instructions included with accessories. Install approved accessories per instructions included with accessories. Contact your dealer for a list of approved accessories.

WARNING! Risk of Fire and Electric Shock! Use ONLY Hearth & Home Technologies-approved optional accessories with this appliance. Using non-listed accessories could result in a safety hazard and will void the warranty.

E. Rock Media Instructions

A rock media kit is available for use with the RED40 and RED40ST models. Install rock media per instructions included with kit.

F. Porcelain Instructions

A Porcelain Kit is available for use with the RED40 and RED40ST models. Install Porcelain per instructions included with kit.

G. Granite Instructions

A Granite Kit is available for use with the RED40 and RED40ST models. Install Granite per instructions included with kit.

H. Fixed Glass Assembly

WARNING! Risk of Asphyxiation! Handle fixed glass assembly with care. Inspect the gasket to ensure it is undamaged and inspect the glass for cracks, chips or scratches.

- **DO NOT** strike, slam or scratch glass.
- **DO NOT** operate fireplace with glass removed, cracked, broken or scratched.
- Replace as a complete assembly.

Removing Fixed Glass Assembly

1. Remove the decorative front.
2. Locate the two spring latches that are on the lower left and right of the fireplace.
3. Use both index fingers to release spring latches. See Figure 14.3.
4. Allow glass to tilt forward. Grasp glass on the upper return lip of glass frame and tilt glass “out” and “down”. Lower gently to rest on side supports. See Figure 14.3. Allow top of glass assembly to tilt forward. Lift glass assembly “up” and “out”.

Replacing Fixed Glass Assembly

1. Locate glide tabs on lower left and right corners.
2. Place glass bottom resting on right and left support. Tilt top of glass assembly toward fireplace.
3. Allow of the gasketing of the glass assembly to touch the face of the fireplace. Lift the glass “up” and “in” to upper glass clip flanges.
4. Hold bottom of the glass as you allow the glass assembly to seat over the two lower glass clips. See Figure 14.3.
5. Assure proper left and right placement of glass and engage both lower spring latches.

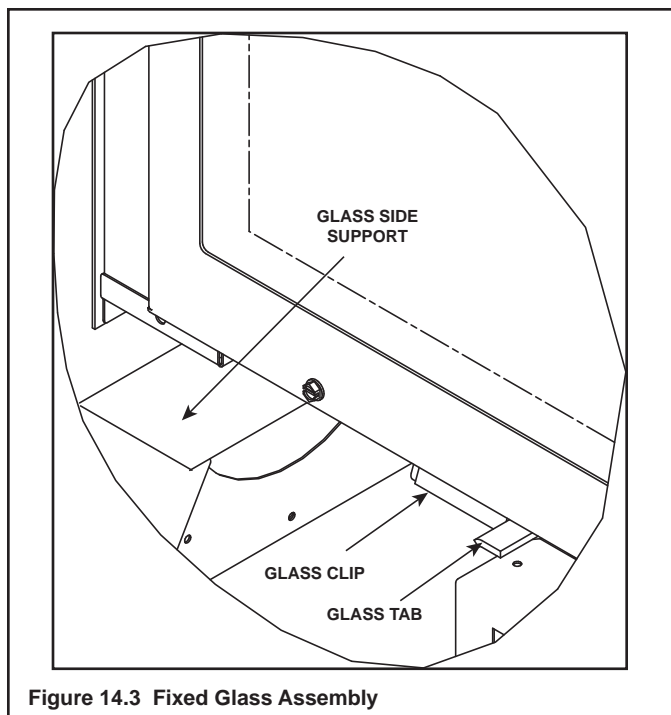


Figure 14.3 Fixed Glass Assembly

I. Install the Mesh

A mesh front is included with the RED40 and RED40ST. For installation instructions, see section 13.D.

J. Air Shutter Setting

Air shutter settings may be adjusted by a qualified installer at the time of installation. The air shutter is set at the factory for minimum vertical vent run. Adjust air shutter for longer vertical runs. See Figure 14.4.

- Loosen the 1/4 in. screw.
- Twist shutter to adjust
- Shutter may be open for longer horizontal vent runs.
- Do not close the air shutter more than 1/16 in. for NG or 1/4 in. for LP.
- Tighten the screw.

NOTICE: If sooting occurs, provide more air by opening the air shutter.

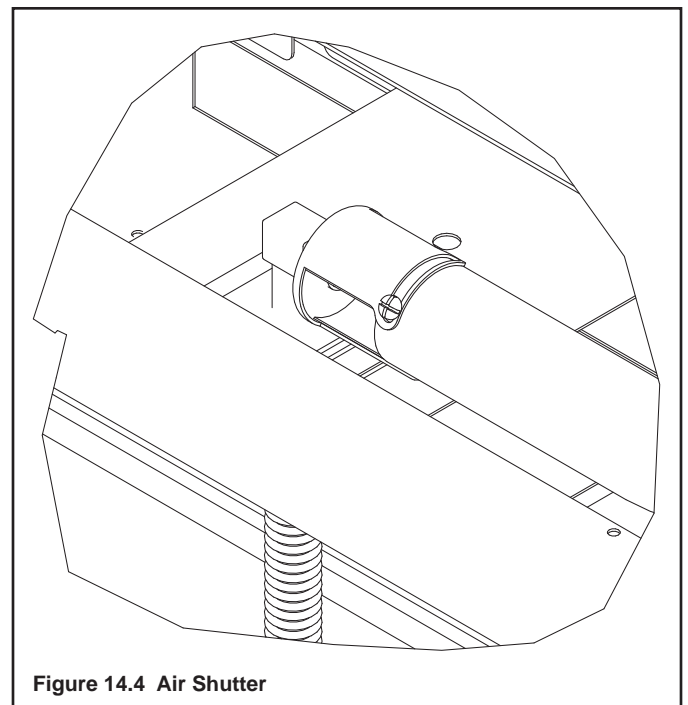


Figure 14.4 Air Shutter

Air Shutter Settings

RED40/RED40ST	NG	LP
GRANITE KIT	1/16 in.	1/4 in.
LIGHT KIT	1/16 in.	1/4 in.
PORCELAIN KIT	1/16 in.	1/4 in.

15 Troubleshooting

With proper installation, operation, and maintenance your gas appliance will provide years of trouble-free service. If you do experience a problem, this troubleshooting guide will assist a qualified service technician in the diagnosis of a problem and the corrective action to be taken. This troubleshooting guide can only be used by a qualified service technician. Contact your dealer to arrange a service call by a qualified service technician.

A. IntelliFire Ignition System

Symptom	Possible Cause	Corrective Action
1. Pilot won't light. The ignitor/module makes noise, but no spark.	a. Incorrect wiring.	Verify "S" wire (white) for sensor and "I" wire (orange) for ignitor are connected to correct terminals on module and pilot assembly.
	b. Loose connections or electrical shorts in the wiring.	Verify no loose connections or electrical shorts in wiring from module to pilot assembly. Verify connections underneath pilot assembly are tight; also verify connections are not grounding out to metal chassis, pilot burner, pilot enclosure, mesh screen if present, or any other metal object.
	c. Ignitor gap is too large.	Verify gap of igniter to right side of pilot hood. The gap should be approximately .17 in. or 1/8 in. (3 mm).
	d. Module.	Turn ON/OFF rocker switch or wall switch to OFF position. Remove ignitor wire "I" from module. Place a grounded wire about 3/16 in. (5 mm) away from "I" terminal on module. Place ON/OFF rocker switch or wall switch in ON position. If there is no spark at "I" terminal module must be replaced. If there is a spark at "I" terminal, module is fine. Inspect pilot assembly for shorted sparker wire or cracked insulator around electrode. Replace pilot if necessary.
2. Pilot won't light, there is no noise or spark.	a. No power or transformer installed incorrectly.	Verify that transformer is installed and plugged into module. Check voltage of transformer under load at spade connection on module with ON/OFF switch in ON position. Acceptable readings of a good transformer are between 3.2 and 2.8 volts AC.
	b. A shorted or loose connection in wiring configuration or wiring harness.	Remove and reinstall the wiring harness that plugs into module. Verify there is a tight fit. Verify pilot assembly wiring to module. Remove and verify continuity of each wire in wiring harness. Replace any damaged components.
	c. Improper wall switch wiring.	Verify that 110/VAC power is "ON" to junction box.
	d. Module not grounded.	Verify black ground wire from module wire harness is grounded to metal chassis of appliance.
	e. Module.	Turn ON/OFF rocker switch or wall switch to OFF position. Remove ignitor wire "I" from module. Place ON/OFF rocker switch or wall switch in ON position. If there is no spark at "I" terminal module must be replaced. If there is a spark at "I" terminal, module is fine. Inspect pilot assembly for shorted sparker wire or cracked insulator around electrode.
3. Pilot sparks, but Pilot will not light.	a. Gas supply.	Verify that incoming gas line ball valve is "open". Verify that inlet pressure reading is within acceptable limits.
	b. Ignitor gap is incorrect.	Verify that spark gap from ignitor to pilot hood is .17 in. or 1/8 in (3 mm).
	c. Module is not grounded.	Verify module is securely grounded to metal chassis of appliance.

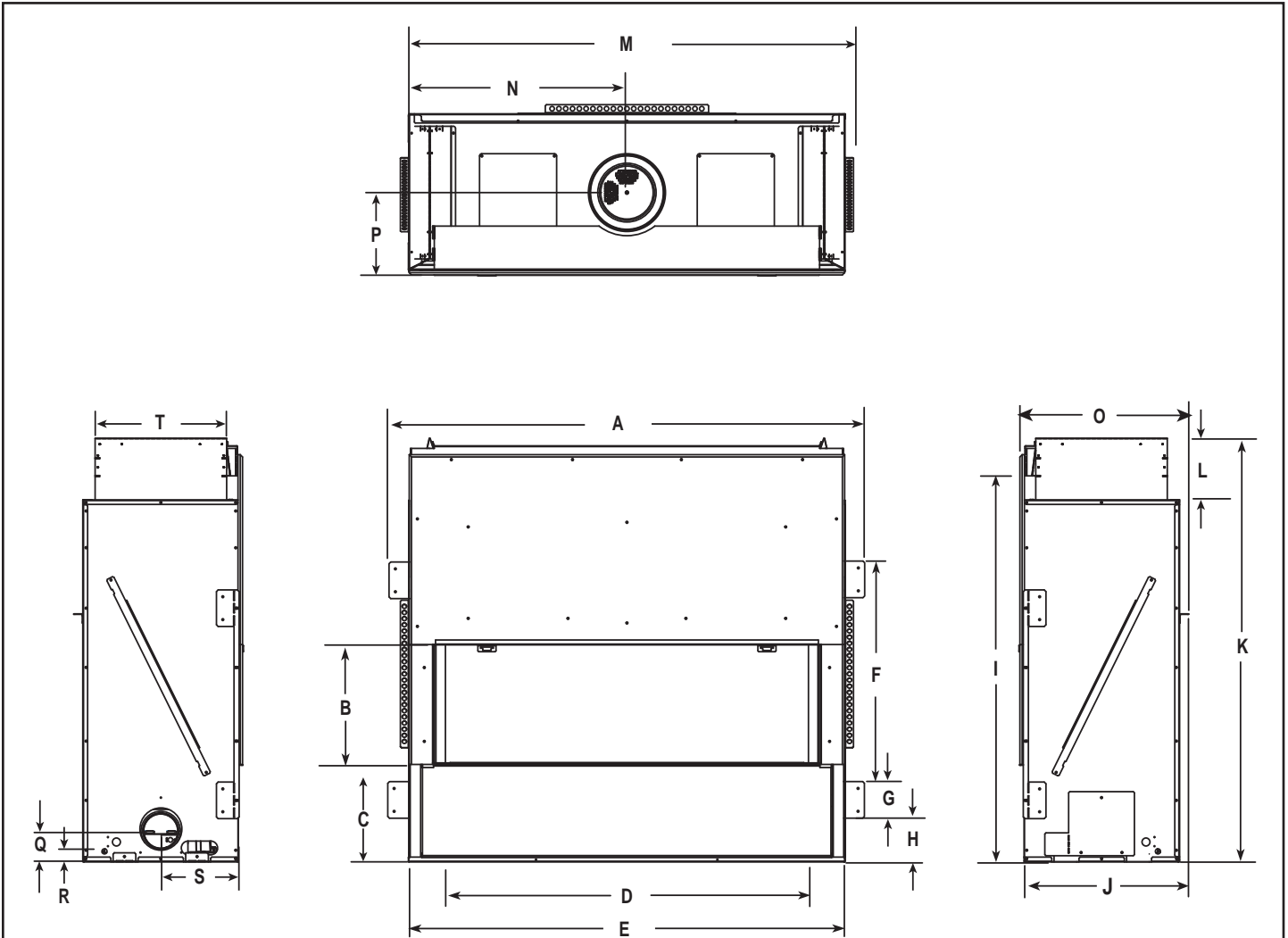
IntelliFire Ignition System - (continued)

Symptom	Possible Cause	Corrective Action
4. Pilot lights but continues to spark, and main burner will not ignite. (If the pilot continues to spark after the pilot flame has been lit, flame rectification has not occurred.)	a. A shorted or loose connection in flame sensing rod.	Verify all connections to wiring diagram in manual. Verify connections underneath pilot assembly are tight. Verify connections are not grounding out to metal chassis, pilot burner, pilot enclosure or screen if present, or any other metal object.
	b. Poor flame rectification or contaminated flame sensing rod.	With fixed glass assembly in place, verify that flame is engulfing flame sensing rod on left side of pilot hood. Flame sensing rod should glow shortly after ignition. Verify correct pilot orifice is installed and gas inlet is set to pressure specifications. Polish flame sensing rod with fine steel wool to remove any contaminants that may have accumulated on flame sensing rod.
	c. Module is not grounded.	Verify module is securely grounded to metal chassis of appliance. Verify that wire harness is firmly connected to the module.
	d. Damaged pilot assembly or contaminated flame sensing rod.	Verify that ceramic insulator around the flame sensing rod is not cracked, damaged, or loose. Verify connection from flame sensing rod to white sensor wire. Polish flame sensing rod with fine steel wool to remove any contaminants that may have accumulated on flame sensing rod. Verify continuity with a multimeter with ohms set at lowest range. Replace pilot if any damage is detected.
	e. Module.	Turn ON/OFF rocker switch or wall switch to OFF position. Remove ignitor wire "I" from module. Place ON/OFF rocker switch or wall switch in ON position. If there is no spark at "I" terminal module must be replaced. If there is a spark at "I" terminal, module is fine.
5. Appliance cycles on and off	a. Control chamber above temperature specifications.	A high limit switch is provided with the unit to assure lower component chamber temperatures do not exceed 150 degrees Fahrenheit. This is a safety feature for this model, but is not common. Contact your dealer for assistance.

16 Reference Materials

A. Appliance Dimension Diagram

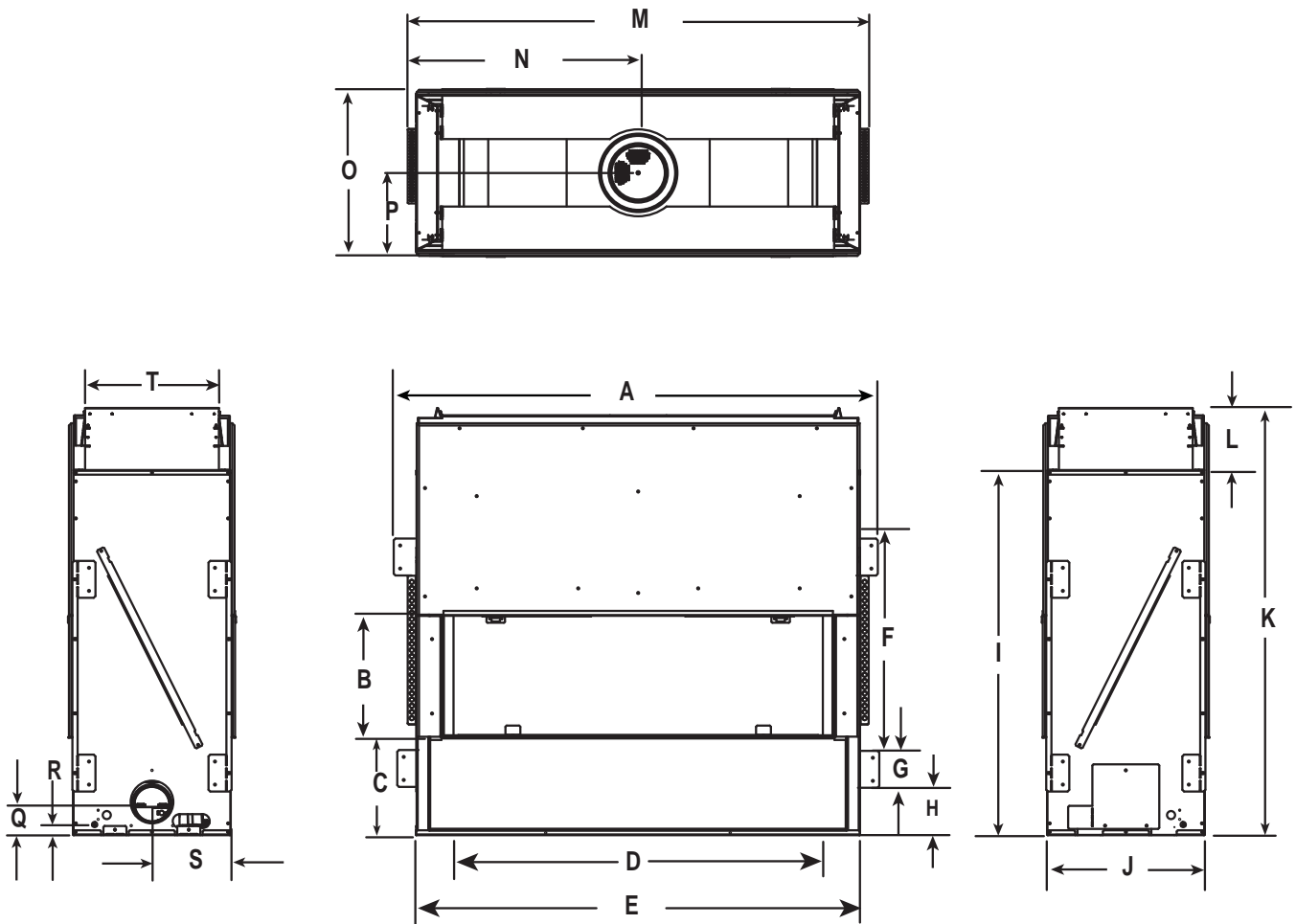
Dimensions are actual appliance dimensions. Use for reference only. For framing dimensions and clearances refer to Section 5.



Location	Inches	Millimeters
A	52	1321
B	13-3/16	335
C	10-3/4	273
D	42-3/4	1086
E	48-1/8	1222
F	21	533
G	4	102
H	4-3/4	121
I	42-15/16	1090
J	18-1/8	460

Location	Inches	Millimeters
K	46-3/4	1187
L	7	178
M	50-1/8	1273
N	25-1/16	637
O	18-5/8	473
P	9-1/16	230
Q	3-3/4	95
R	1-1/2	38
S	8-1/2	216
T	14-1/2	368

Figure 16.1 Appliance Dimensions RED40

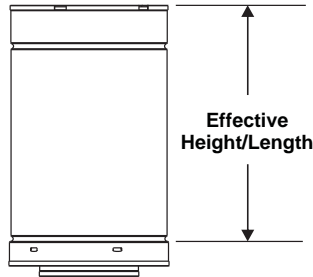


Location	Inches	Millimeters
A	52	1321
B	13-3/16	335
C	10-3/4	273
D	42-3/4	1086
E	48-1/8	1222
F	21	533
G	4	102
H	4-3/4	121
I	42-15/16	1090
J	17-1/8	435

Location	Inches	Millimeters
K	46-3/4	1187
L	7	178
M	50-1/8	1273
N	25-1/16	637
O	18-1/8	460
P	9-1/16	230
Q	3-3/4	95
R	1-1/2	38
S	8-1/2	216
T	14-1/2	368

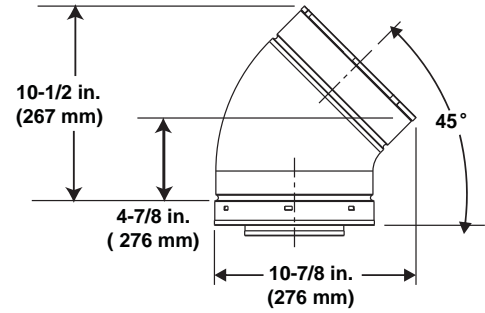
Figure 16.2 Appliance Dimensions RED40ST

B. Vent Components Diagrams

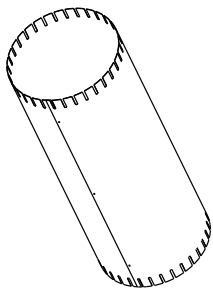


DVP Pipe (see chart)

Pipe	Effective Length	
	Inches	Millimeters
DVP4	4	102
DVP6	6	152
DVP12	12	305
DVP24	24	610
DVP36	36	914
DVP48	48	1219
DVP6A	3 to 6	76 to 152
DVP12A	3 to 12	76 to 305
DVP12MI	3 to 12	76 to 305
DVP24MI	3 to 24	76 to 610

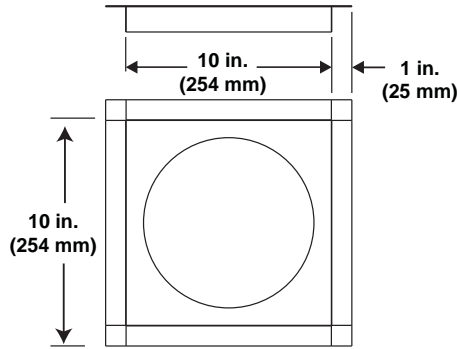


DVP45 (45° Elbow)

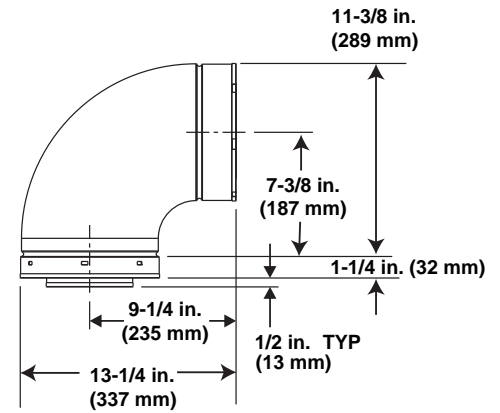


Assembled
Height: 24 in./610 mm
Diameter: 10 in./254 mm

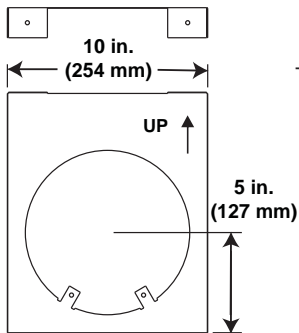
DVP-AS2



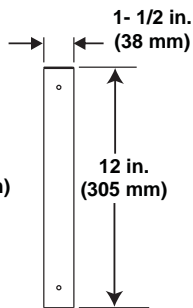
DVP-FS (Ceiling Firestop)



DVP90ST (90° Elbow)



DVP-HVS (Vent Support)

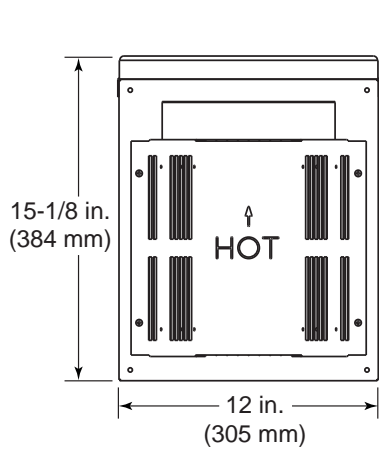


DVP-WS (Wall Shield Firestop)

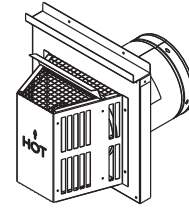
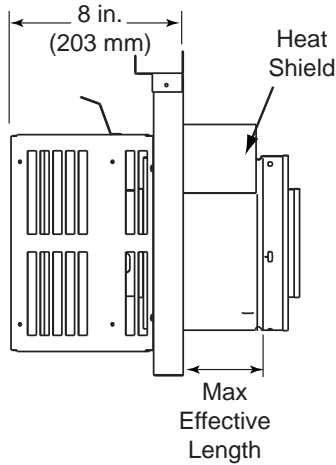
Figure 16.2 DVP vent components

B. Vent Components Diagrams (continued)

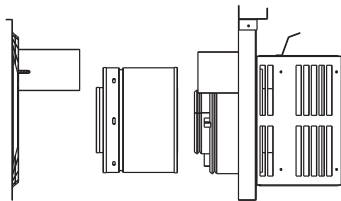
Note: Heat shields MUST overlap by a minimum of 1-1/2 in. (38 mm). **The heat shield is designed to be used on a wall 4 in. to 7-1/4 in. (102 mm to 184 mm) thick.** If wall thickness is less than 4 in. (102 mm) the existing heat shields must be field trimmed. If wall thickness is greater than 7-1/4 in. (184 mm) a DVP-HSM-B will be required.



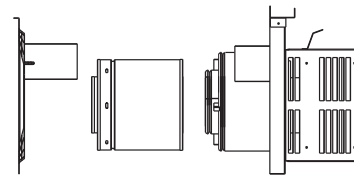
DVP-TRAP
Horizontal Termination Cap



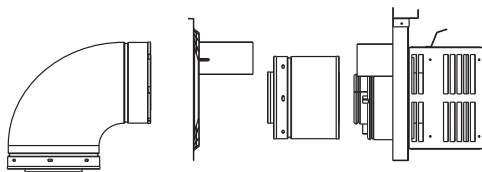
Term Cap	Minimum Effective Length	Maximum Effective Length
Trap1	3-1/8 in.	4-5/8 in.
	79 mm	117 mm
Trap2	5-3/8 in.	9-3/8 in.
	137 mm	238 mm



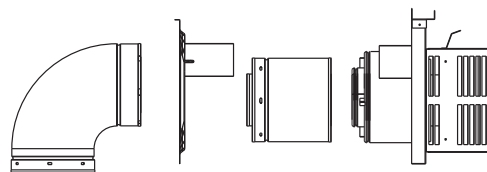
DVP-TRAP1



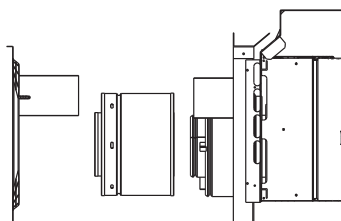
DVP-TRAP2



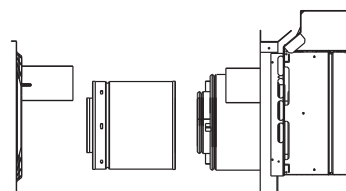
DVP-TRAPK1



DVP-TRAPK2



DVP-HPC1



DVP-HPC2

Figure 16.3 DVP vent components

B. Vent Components Diagrams (continued)

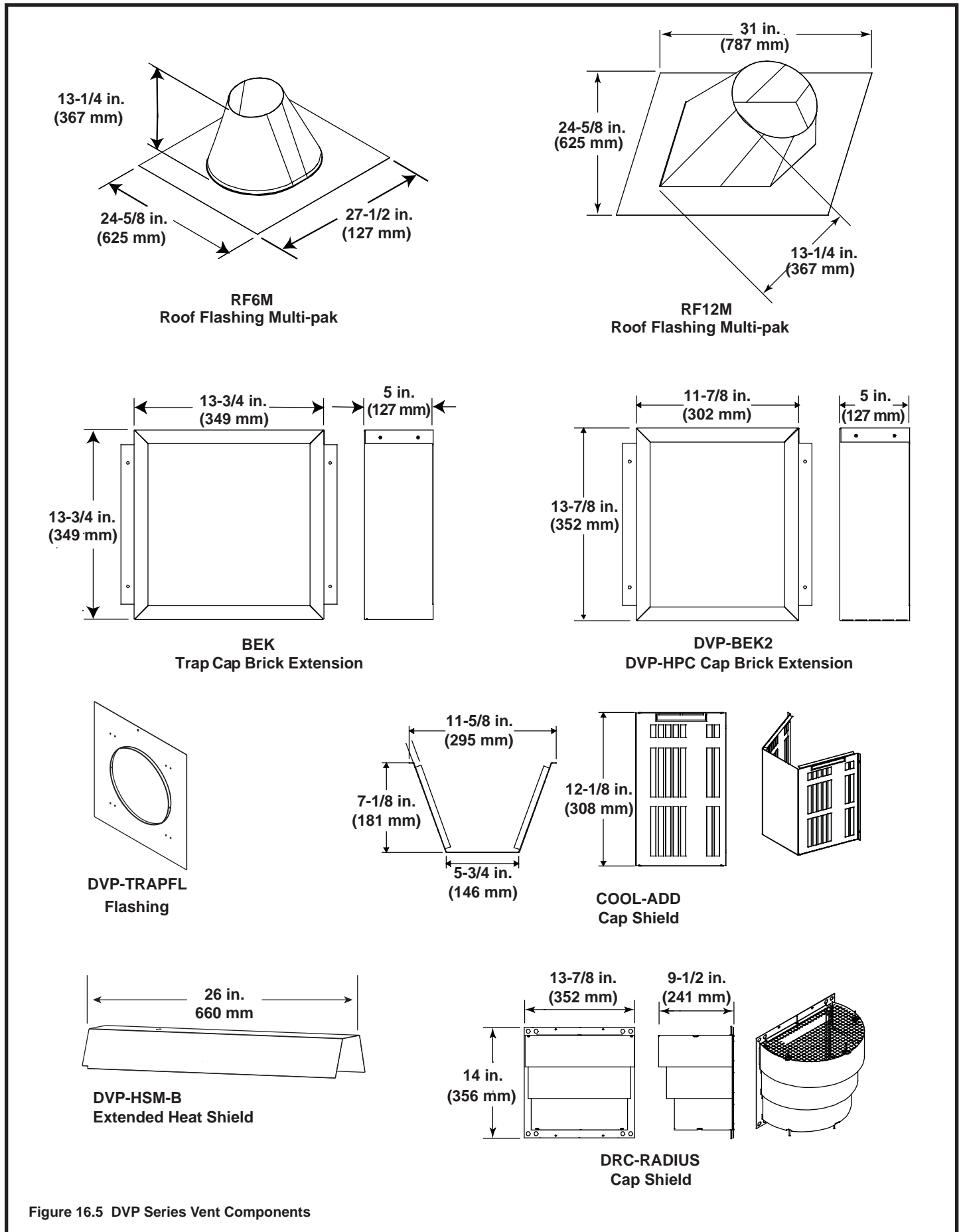
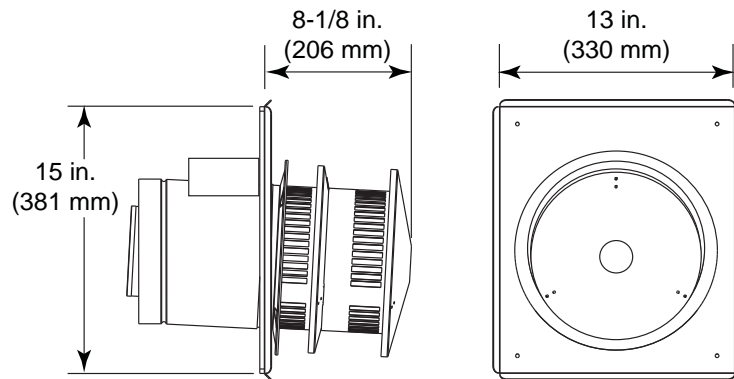
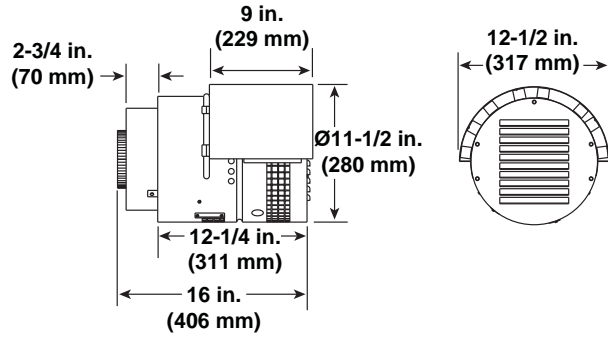
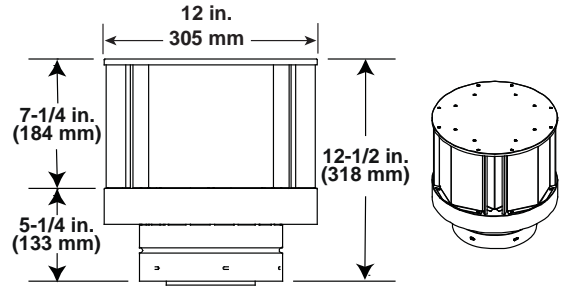
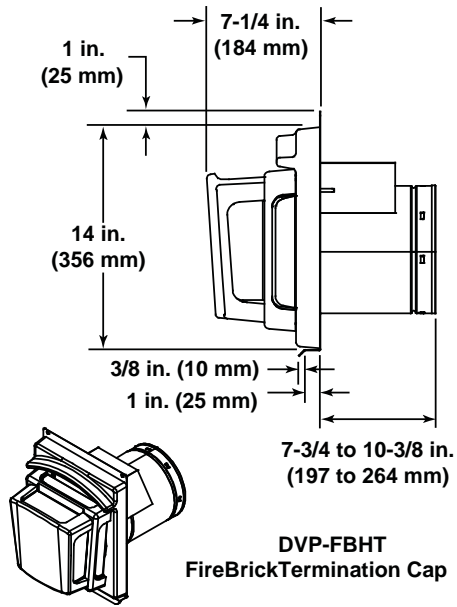


Figure 16.5 DVP Series Vent Components

B. Vent Components Diagrams (continued)



DVP-HRC-SS NOT APPROVED FOR ALL UNITS.

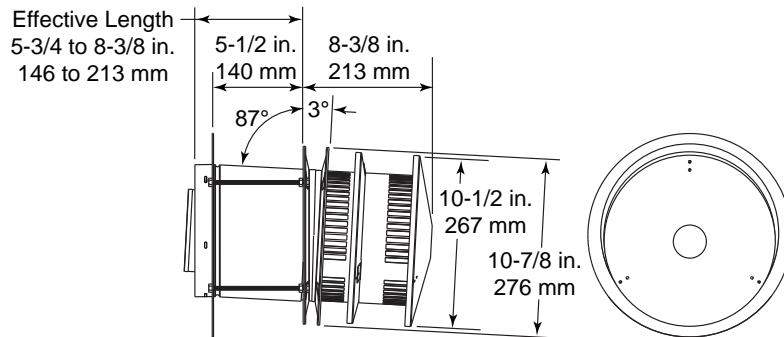
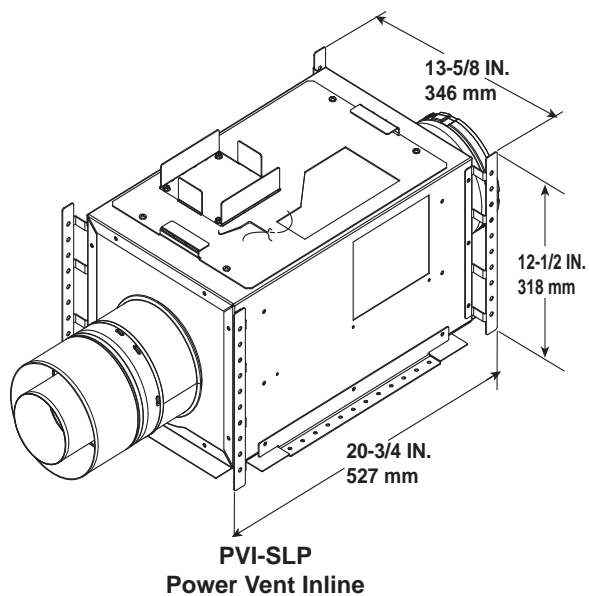


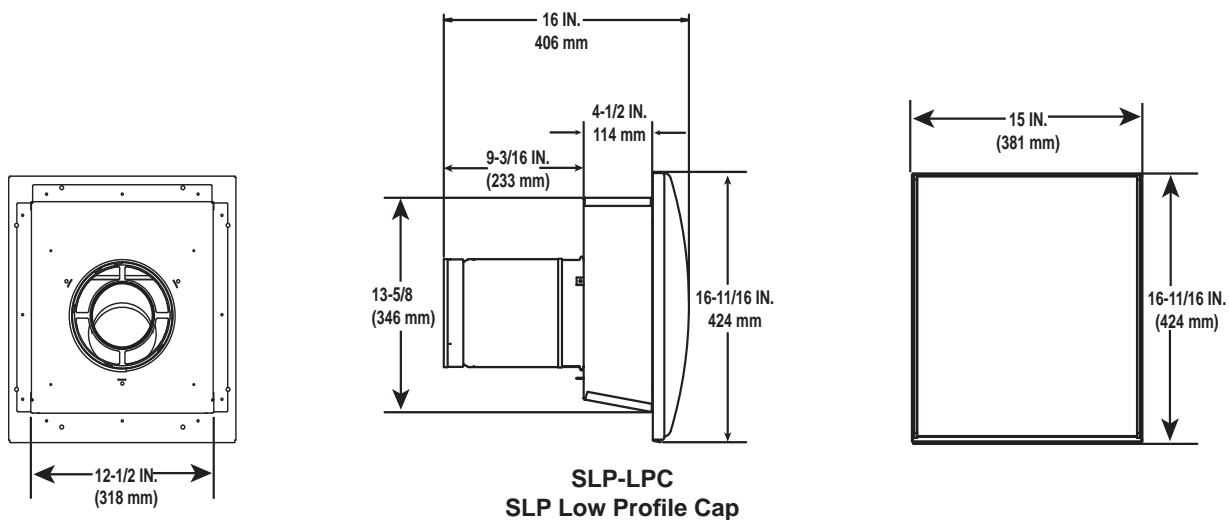
Figure 16.5 DVP vent components

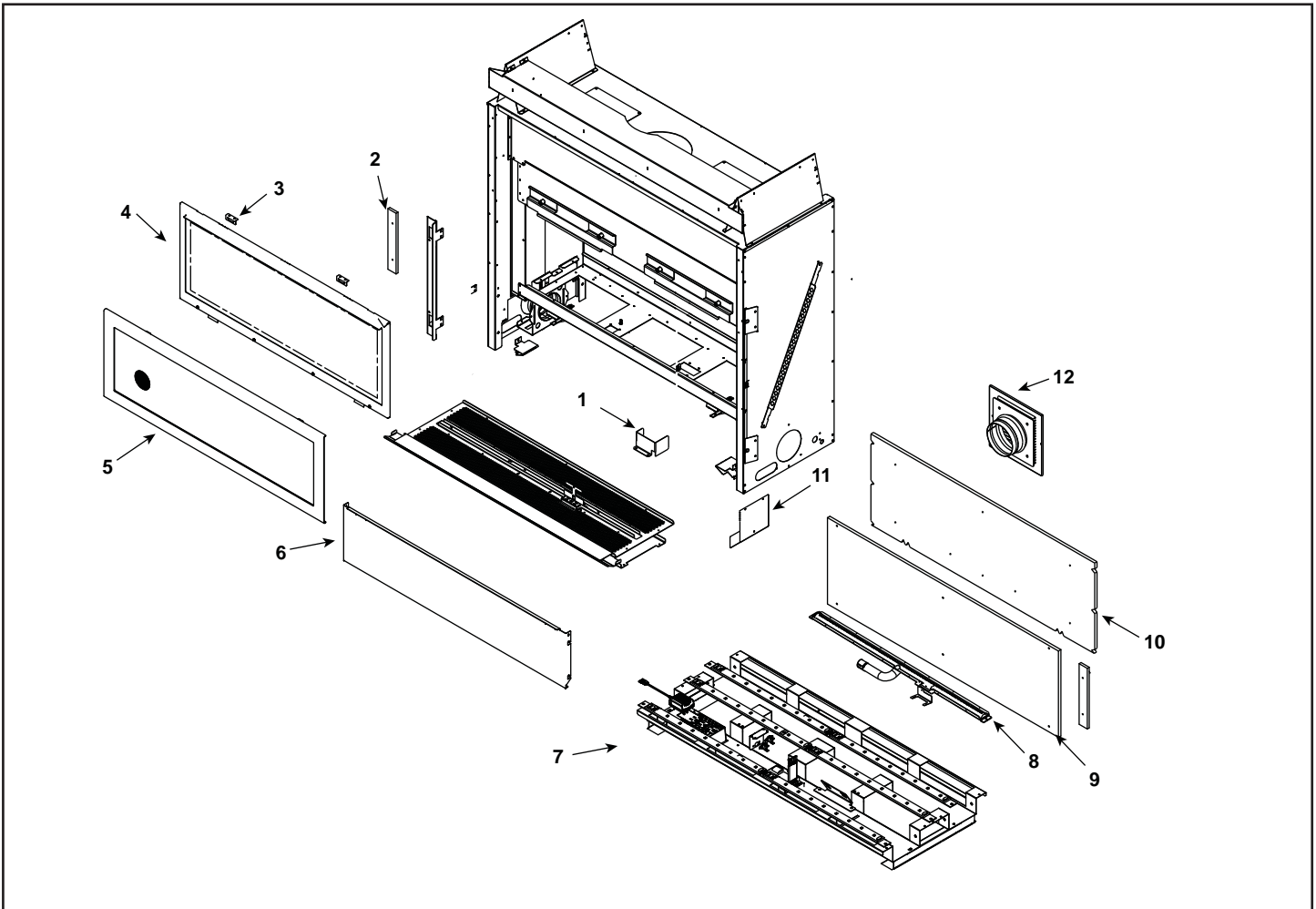
B. Vent Components Diagrams (continued)



Optional Wire Harness	
DESCRIPTION	PART NUMBER
10 ft. PV Wire Harness	PVI-WH10
20 ft. PV Wire Harness	PVI-WH20
40 ft. PV Wire Harness	PVI-WH40
60 ft. PV Wire Harness	PVI-WH60
80 ft. PV Wire Harness	PVI-WH80
100 ft. PV Wire Harness	PVI-WH100

Note: Wire harnesses required to power the PVI-SLP connect to the appliance and are ordered separately from PVI-SLP. Contact your dealer to order.





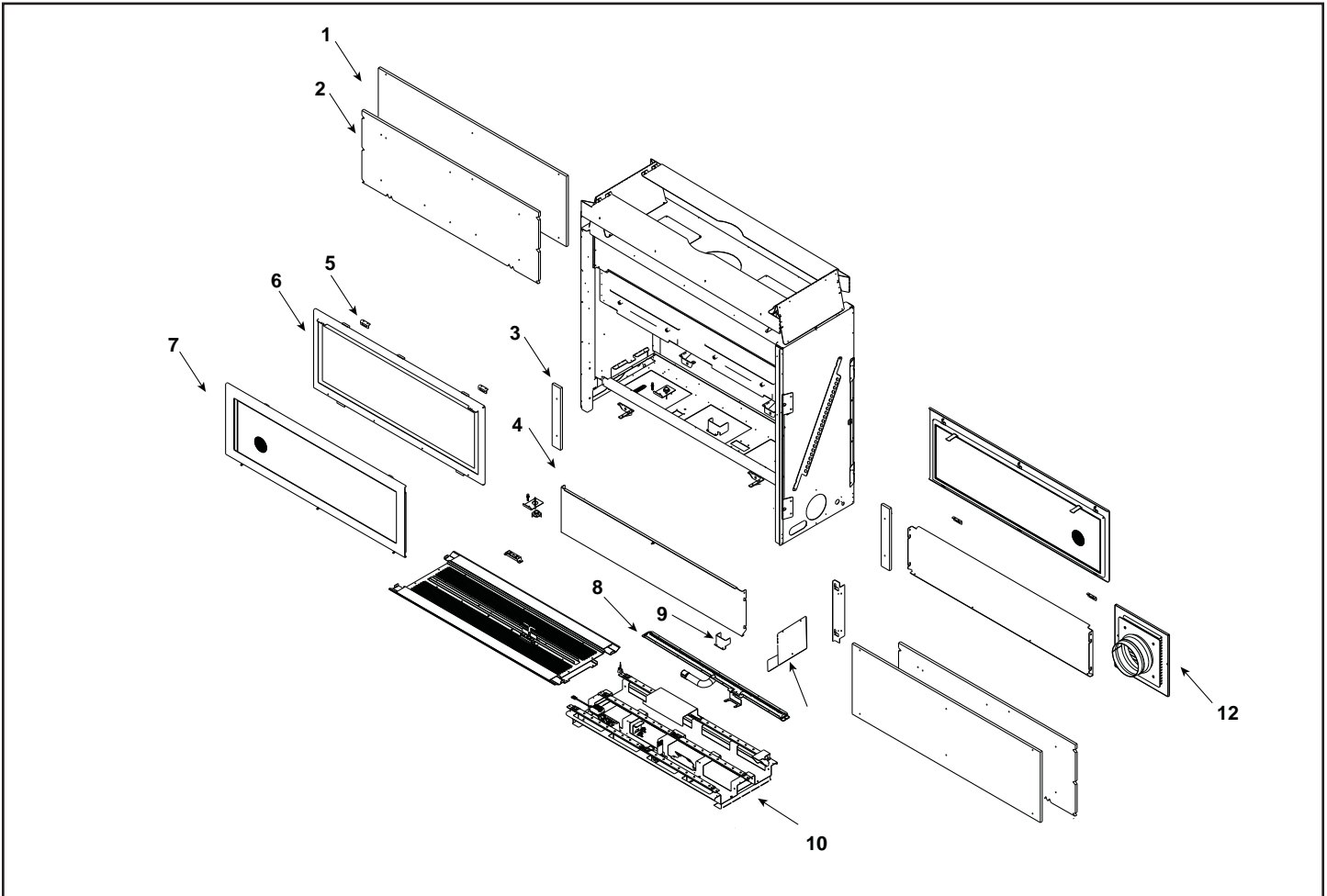
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
1	Pilot Shield		2155-173	
2	Non Combustible Board, Side Finish Panel	Qty 2 req	2155-460	
3	Mesh Clips	Pkg of 4	2155-184/4	Y
4	Glass Assembly		GLA-RED40	Y
5	Fire screen Door Assembly		2155-012	
→	Mesh		2155-031	
6	Bottom Face Plate		2155-112	
7	Bottom Base Assembly		2155-025	
8	Burner Assembly NG/LP		2155-007	Y
9	Non Combustible Board, Outer		2155-461	
10	Non Combustible Board, Inner		2155-462	
11	Panel Cover, Side		2155-140	
12	Vent Assembly		2155-071	
	Grill Panel		2155-150	

Unique service parts by model on following page.



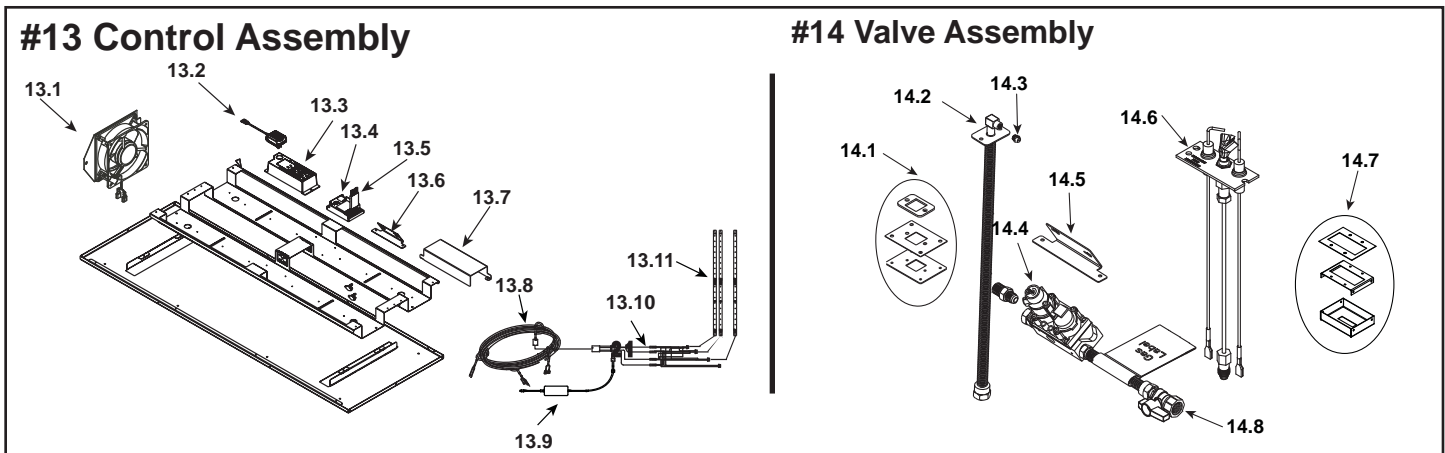
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
1	Non Combustible Board, Outer	Qty 2 req	2155-461	
2	Non Combustible Board, Inner	Qty 2 req	2155-462	
3	Non Combustible Board, Side Panel Finish	Qty 4 req	2155-460	
4	Bottom Face Plate	Qty 2 req	2155-112	
5	Mesh Clips	Pkg of 4	2155-184/4	Y
6	Glass Assembly	Qty 2 req	GLA-RED40	Y
7	Fire screen Door Assembly	Qty 2 req	2155-012	
→	Mesh		2155-031	
8	Burner Assembly NG		2155-007	Y
9	Pilot Shield		2155-173	
10	Base Pan		2155-025	
11	Panel Cover, Side		2155-140	
12	Vent Assembly		2155-071	
	Grille Panel		2155-150	

Additional service part numbers on following page.



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



**Stocked
at Depot**

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
13.1	Fan Assembly with Bracket	Pre Feb. 2012	2155-070	
		Post Feb 2012	2159-070	
	Blower Assembly		705-567A	Y
13.2	Transformer		593-593A	Y
13.3	Junction Box		4021-013	Y
13.4	Control Module		593-592	Y
13.5	Wire Assembly		593-590A	Y
13.6	Valve Bracket		2155-149	
13.7	Heat Shield, Module		2155-177	
13.8	LED Control Cable		2155-755	Y
13.9	LED Power Supply		2155-751	Y
13.10	LED Jumper Connections		2155-752	Y
13.11	LED Light Bar Assembly	Qty 3 req	2155-057	Y
14.1	Flex Plate/ Gasket Assembly		2155-044	
14.2	18" Flex Tube Assembly		530-302A	Y
14.3	Orifice NG (#34C)		582-834	Y
	Orifice LP (#50C)		582-850	Y
14.4	Valve NG		750-500	Y
	Valve LP		750-501	Y
14.5	Valve Bracket		2155-149	
14.6	Pilot Assembly NG		2090-012	Y
	Pilot Assembly LP		2090-013	Y
14.7	Pilot Bracket Assembly		2155-049	
14.8	Flex Ball Valve Assembly		302-320A	Y

Additional service part numbers on following page.

IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.

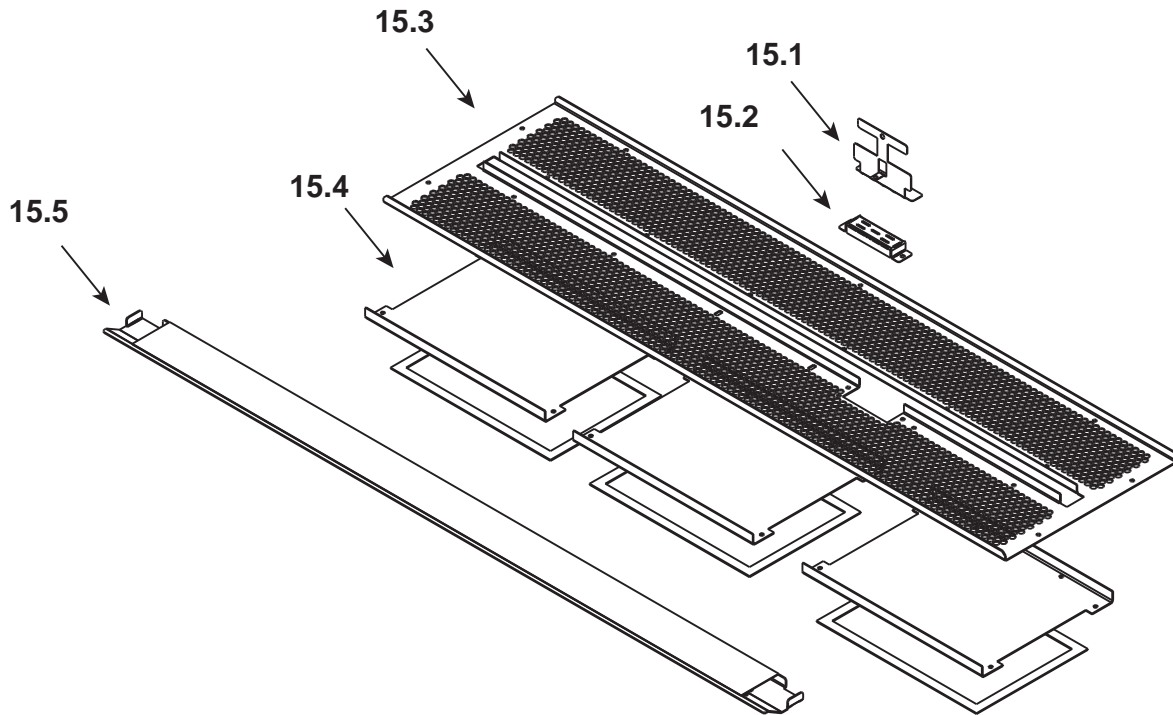


Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
	Dual Wall Switch Plate		2155-511	
	Fiberglass Rope		060-455	
	Flexible Duct Connector 8 FT		2155-360	
	Glass Latch Support Assembly	Qty 4 req	2155-045	Y
→	Grommet, 3-Hole		2118-420	
	High Limit Switch	Qty 2 req	514-530	Y
	High Temp Limit Switch Assembly		046-018A	Y
	Hood Clips	Pkg of 24	047-805-24	Y
	Jumper Wire 2 in 1/4 F to 1/4 F		2155-033	Y
	Jumper Wire 3/16 F to 1/4 F		2155-035	Y
	Jumper Wire 3/16 M to 1/4 F		2155-034	Y
→	Pilot Bracket		2155-176	
→	Pilot Support Bracket Assembly		2155-009	
	Restrictor 3"		2155-145	
	Restrictor 4"		2155-162	
	Retainer clip	Qty 9 req	2155-159	
	Touch Up Paint		TUP-GBK-12	
	Wall Switch		WSK-21-W	
	Wall Switch Wire		062-550	
	Wire Harness 20 inch Female		107-559A	Y
	Conversion Kit NG		NGK-RED40	Y
	Conversion Kit LP		LPK-RED40	Y
	Pilot Orifice NG		593-528	Y
	Pilot Orifice LP		593-527	Y
	Regulator NG		NGK-DXV	Y
	Regulator LP		LPK-DXV	Y

Unique service parts by model on following page.

#15 Base Pan No Lights with Media



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.

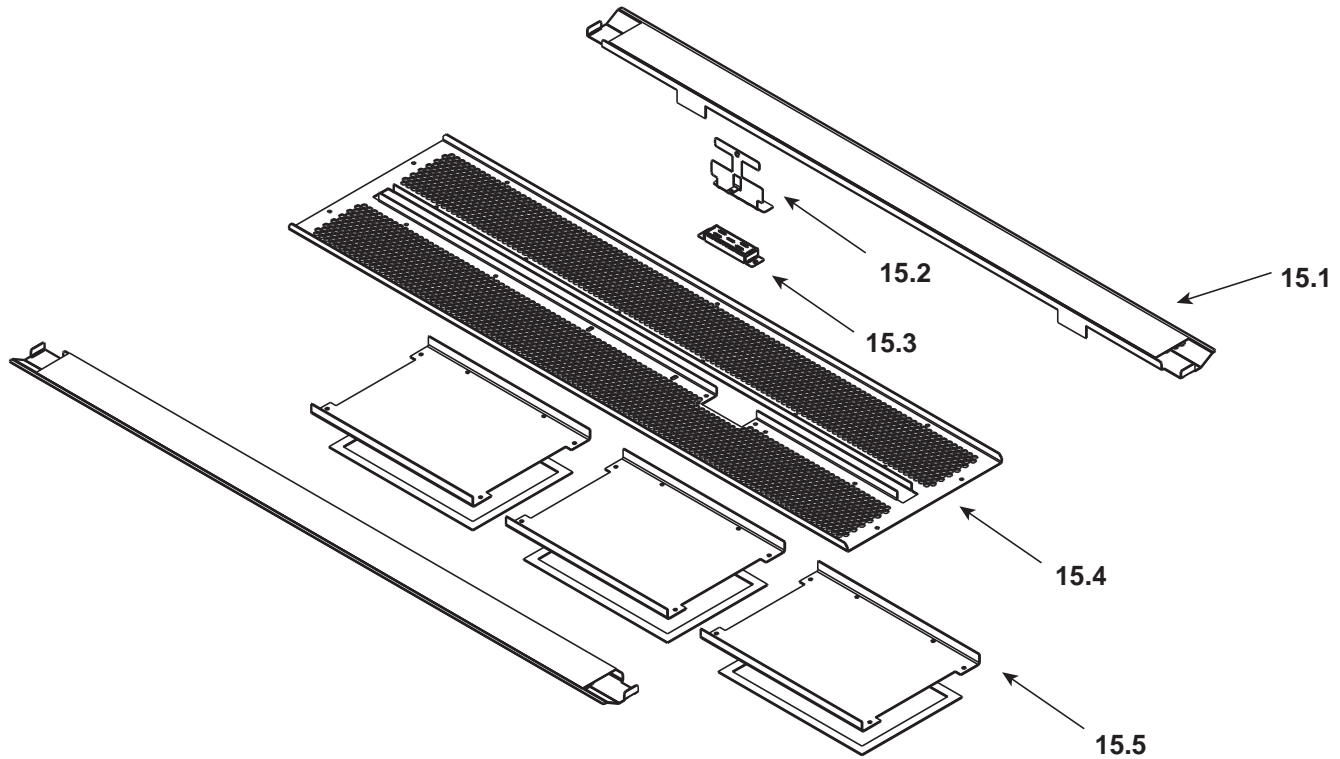


Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
Model No Media Option				
	RED40-NWN (No lights, White Rock, No Refractory)		RED40-NON (No lights, Onyx, No Refractory)	
	RED40-NWG (No lights, White Rock, Granite)		RED40-NOG (No lights, Onyx, Granite)	
	RED40-NWP (No lights, White Rock, Porcelain)		RED40-NOP (No lights, Onyx, Porcelain)	
15	Base Pan With Media		2155-026	
15.1	Rock Placement Jig		2155-170	
15.2	Pilot Cover		2155-160	
15.3	Base Pan		2155-151	
15.4	Bottom Plate	Qty 3 req	2155-161	
15.5	Access Panel Assembly		2155-060	
	Rock	Solid White	MEDIA-WHITE	
		Onyx	MEDIA-ONYX	
	Refractory	Granite	GR40-L	
		Metal	SMR-40NL	
		Porcelain	POR40-L	

Additional service part numbers on following page.

#15 Base Pan No Lights with Media



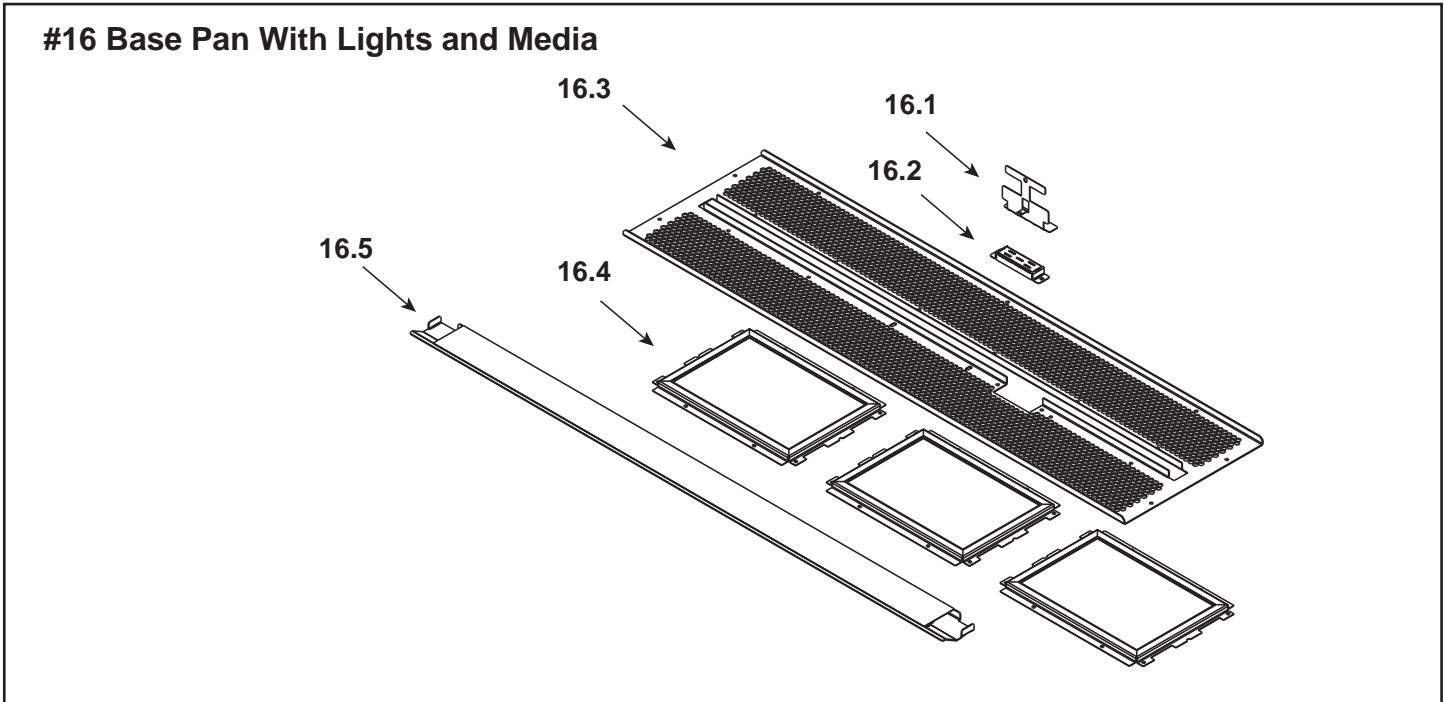
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
	RED40ST-NWN (No lights, White Rock, No Refractory) RED40ST-NWG (No lights, White Rock, Granite) RED40ST-NWP (No lights, White Rock, Porcelain)	RED40ST-NON (No lights, Onyx, No Refractory) RED40ST-NOG (No lights, Onyx, Granite) RED40ST-NOP (No lights, Onyx, Porcelain)		
15	Base Pan With Media		2175-026	
15.1	Access Panel Assembly	Qty 2 req	2155-060	
15.2	Rock Placement Jig		2155-170	
15.3	Pilot Cover		2155-171	
15.4	Base Pan		2155-151	
15.5	Bottom Plate	Qty 3 req	2155-161	
	Rock	Solid White	MEDIA-WHITE	
		Onyx	MEDIA-ONYX	
	Refractory	Granite	GR40ST-L	
		Metal	SMR-40STNL	
		Porcelain	POR40ST-L	

Additional service part numbers on following page.



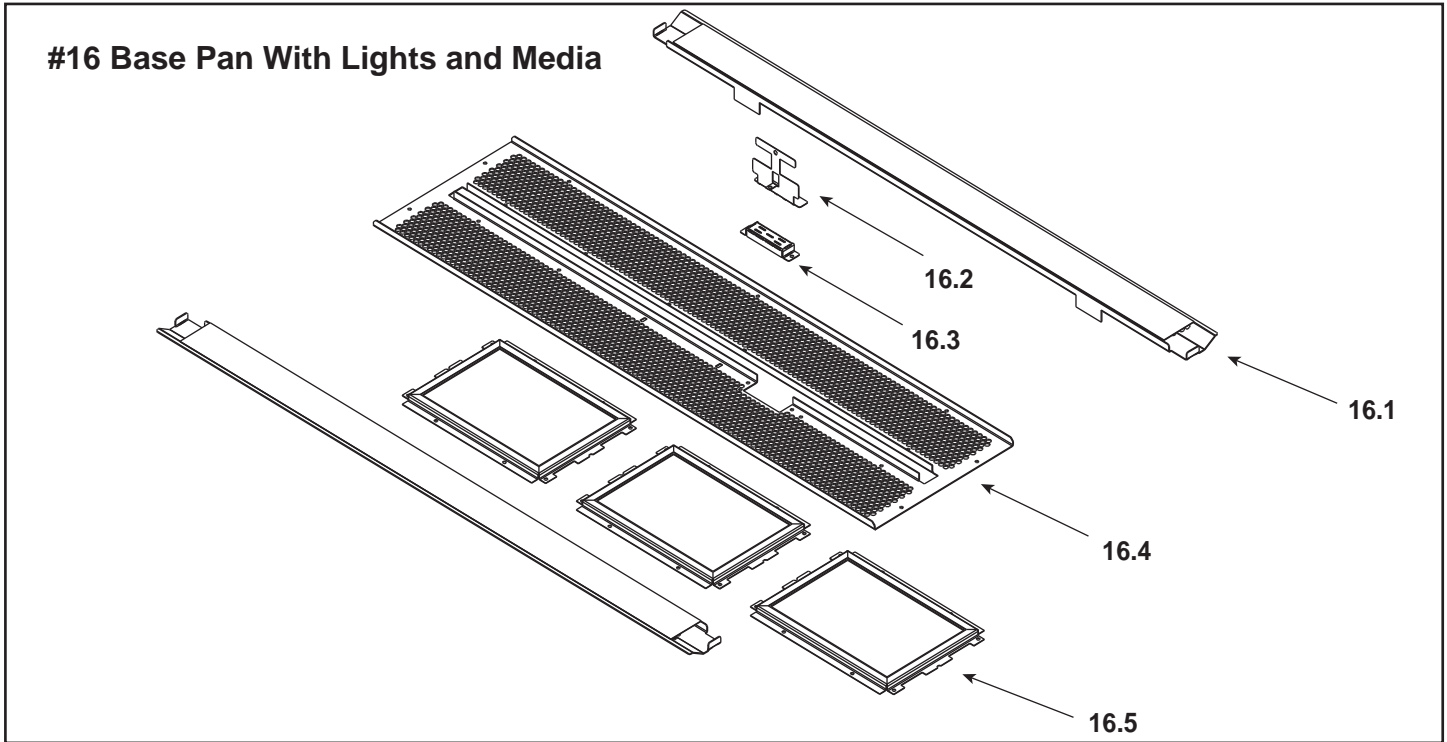
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
Model Media Option				
	RED40-LRP (Lights, Red Rock, Porcelain)		RED40-LGP (Lights, Green Rock, Porcelain)	
	RED40-LRN (Lights, Red Rock, No Refractory)		RED40-LGN (Lights, Green Rock, No Refractory)	
	RED40-LRG (Lights, Red Rock, Granite)		RED40-LGG (Lights, Green Rock, Granite)	
	RED40-LCG (Lights, Clear, Granite)		RED40-LBP (Lights, Deep Blue, Porcelain)	
	RED40-LCN (Lights, Clear, No Refractory)		RED40-LBN (Lights, Deep Blue, No Refractory)	
	RED40-LCP (Lights, Clear, Porcelain)		RED40-LBG (Lights, Deep Blue, Granite)	
16	Base Pan with Media		2155-027	
16.1	Rock Placement Jig		2155-170	
16.2	Pilot Cover		2155-171	
16.3	Base Pan		2155-151	
16.4	Glass Assembly, Lights	Qty 3 req	2155-019	
16.5	Access Panel Assembly		2155-060	
	Rock	Ruby Red	MEDIA-RED	
		Clear	MEDIA-CLEAR	
		Dark Green	MEDIA-GREEN	
		Deep Blue	MEDIA-BLUE	
	Refractory	Granite	GR40-L	
		Porcelain	POR40-L	
	Convert from Porcelain or Granite to Metal Refractory	Qty 2 req	2155-232	
	On/Off Switches	Lighted Units Only	2155-204	Y

Additional service part numbers on following page.



IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.

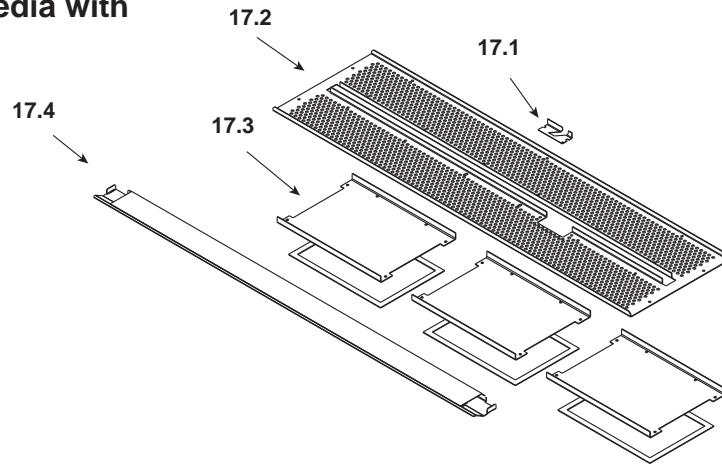


Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
	RED40ST-LRP (Lights, Red Rock, Porcelain)		RED40ST-LGP (Lights, Green Rock, Porcelain)	
	RED40ST-LRN (Lights, Red Rock, No Refractory)		RED40ST-LGN (Lights, Green Rock, No Refractory)	
	RED40ST-LRG (Lights, Red Rock, Granite)		RED40ST-LGG (Lights, Green Rock, Granite)	
	RED40ST-LCG (Lights, Clear, Granite)		RED40ST-LBP (Lights, Deep Blue, Porcelain)	
	RED40ST-LCN (Lights, Clear, No Refractory)		RED40ST-LBN (Lights, Deep Blue, No Refractory)	
	RED40ST-LCP (Lights, Clear, Porcelain)		RED40ST-LBG (Lights, Deep Blue, Granite)	
16	Base Pan with Media		2175-027	
16.1	Access Panel Assembly	Qty 2 req	2155-060	
16.2	Rock Placement Jig		2155-170	
16.3	Pilot Cover		2155-171	
16.4	Base Pan		2155-151	
16.5	Glass Assembly, Lights	Qty 3 req	2155-019	
	Rock	Ruby Red	MEDIA-RED	
		Clear	MEDIA-CLEAR	
		Dark Green	MEDIA-GREEN	
		Deep Blue	MEDIA-BLUE	
	Refractory	Granite	GR40ST-L	
		Porcelain	POR40ST-L	
	Convert from Porcelain or Granite to Metal Refractory	Qty 2 req	2155-232	
	3 On/Off Switch	Lighted Units Only	2155-204	Y

Additional service part numbers on following page.

#17 Base Pan No Lights or Media with Porcelain or No refractory



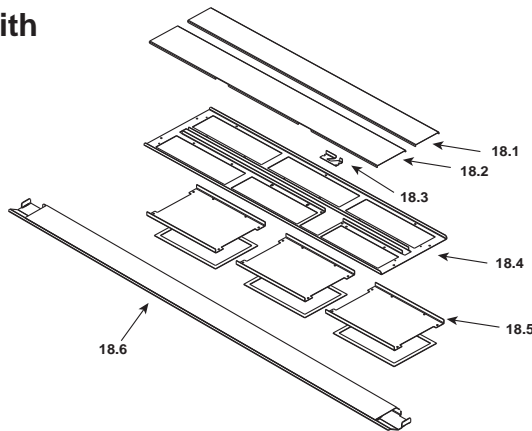
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
RED40-NNN (No lights, No Rock, No Refractory)		RED40-NNP (No lights, No Rock, Porcelain)		
17	Base Pan No Media Option		2155-028	
17.1	Burner Insert		2155-160	
17.2	Base Pan		2155-152	
17.3	Bottom Plate	Qty 3 req	2155-161	
17.4	Access Panel Assembly		2155-060	

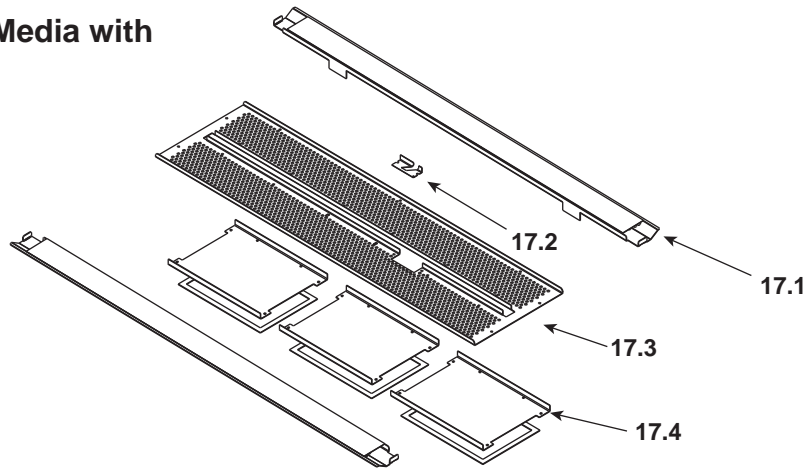
#18 Base Pan No Lights or Media with Granite refractory



RED40-NNG (No lights, No Rock, Granite)				
ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
18	Base Pan No Media Option		2155-029	
18.1	Base Plate Inner	Back	2155-133	
18.2	Base Plate Inner	Front	2155-132	
18.3	Burner Insert		2155-160	
18.4	Base Pan		2155-134	
18.5	Bottom Plate	Qty 3 req	2155-161	
18.6	Access Panel Assembly		2155-060	

Additional service part numbers on following page.

#17 Base Pan No Lights or Media with Porcelain or No refractory



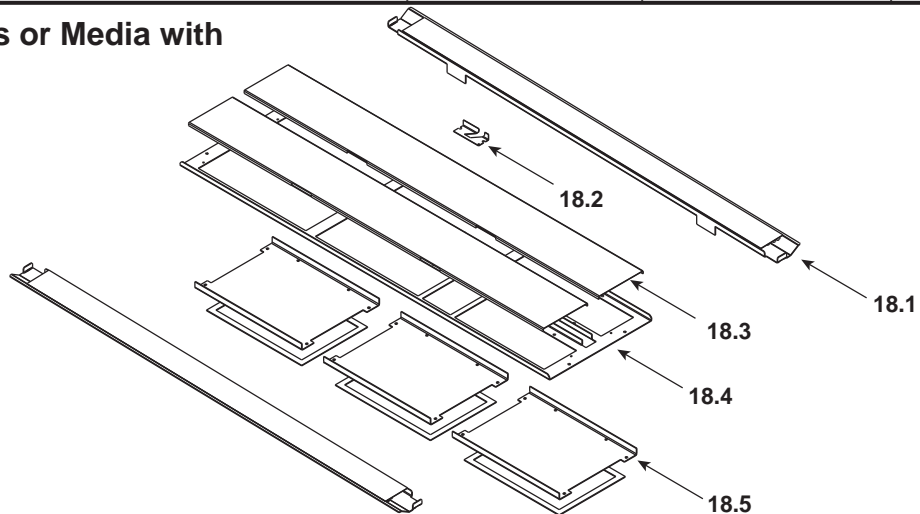
IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your appliance please provide model number and serial number. All parts listed in this manual may be ordered from an authorized dealer.



Stocked at Depot

ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
RED40ST-NNN (No lights, No Rock, No Refractory)		RED40ST-NNP (No lights, No Rock, Porcelain)		
17	Base Pan No Media		2175-028	
17.1	Access Panel Assembly	Qty 2 req	2155-060	
17.2	Burner Insert		2155-160	
17.3	Base Pan		2155-152	
17.4	Bottom Plate	Qty 3 req	2155-161	

#18 Base Pan No Lights or Media with Granite refractory



RED40ST-NNG (No lights, No Rock, Granite)				
ITEM	DESCRIPTION	COMMENTS	PART NUMBER	
18	Base Pan with Media		2175-029	
18.1	Access Panel Assembly	Qty 2 req	2155-060	
18.2	Burner Insert		2155-160	
18.3	Mesh Plate	Qty 2 req	2155-132	
18.4	Base Pan		2155-134	
18.5	Bottom Plate	Qty 2 req	2155-161	

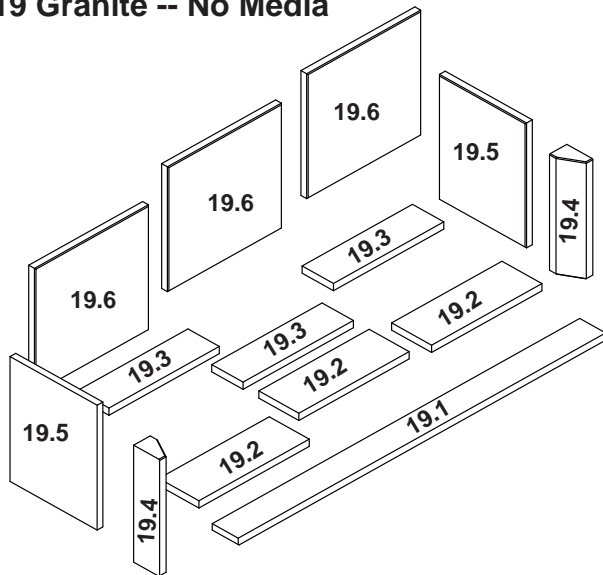
Additional service part numbers on following page.

No one builds a better fire

Beginning Manufacturing Date: May 2009

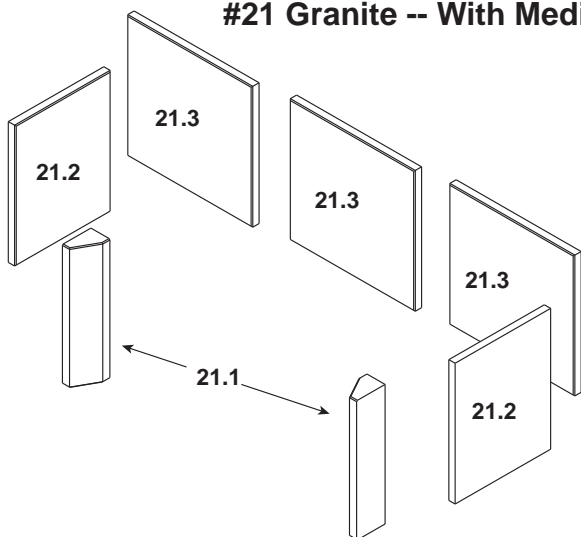
Ending Manufacturing Date: _____

#19 Granite -- No Media



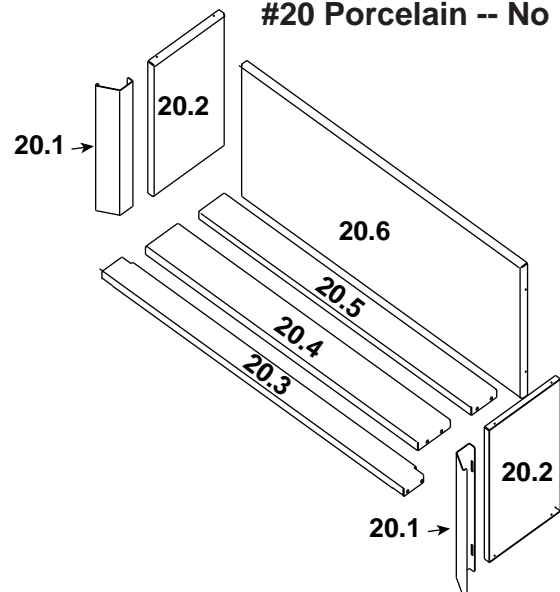
ITEM	DESCRIPTION	COMMENTS	PART NUMBER
19	Refractory Kit		GR40-F
19.1	Refractory Outer		2155-217
19.2	Refractory, Inner (Qty 3 req)		2155-215
19.3	Refractory, Inner Btm (Qty 3 req)		2155-216
19.4	Refractory, Corner (Qty 2 req)		2155-235
19.5	Refractory, Side (Qty 2 req)		2155-210
19.6	Refractory, Back (Qty 3 req)		2155-209

#21 Granite -- With Media



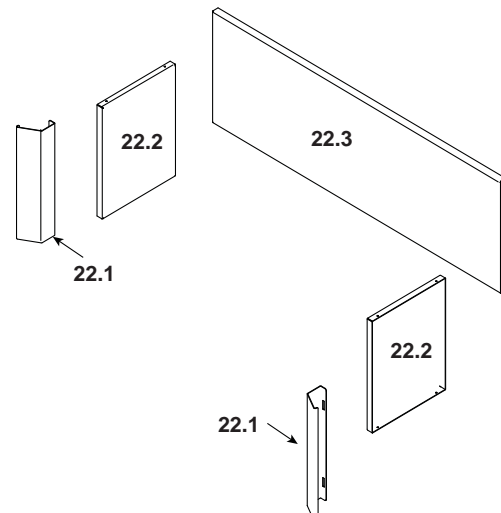
ITEM	DESCRIPTION	PART NUMBER
21	Refractory Kit	GR40-L
21.1	Refractory, Corner (Qty 2 req)	2175-225
21.2	Refractory, Side (Qty 2 req)	2155-210
21.3	Refractory, Back (Qty 3 req)	2155-209

#20 Porcelain -- No Media



ITEM	DESCRIPTION	COMMENTS	PART NUMBER
20	Refractory Kit		POR40-F
20.1	Refractory, Corner (Qty 2 req)		2155-230
20.2	Refractory, Side (Qty 2 req)		2155-223
20.3	Refractory, Outer Bottom		2155-226
20.4	Refractory, Inner Front		2155-224
20.5	Refractory, Inner		2155-225
20.6	Refractory, Back		2155-222

#22 Porcelain -- With Media

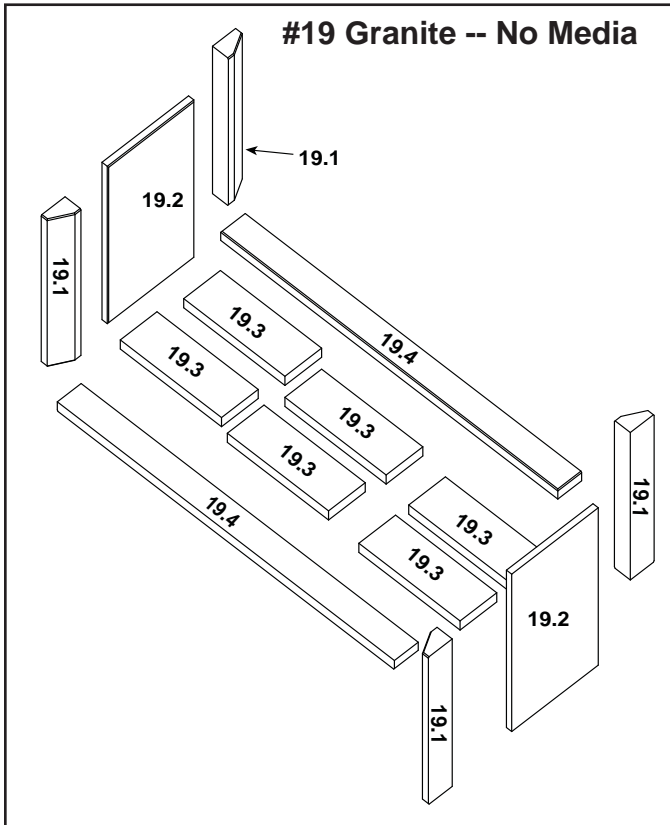


ITEM	DESCRIPTION	PART NUMBER
22	Refractory Kit	POR40-L
22.1	Refractory, Corner (Qty 2 req)	2155-219
22.2	Refractory, Side (Qty 2 req)	2155-223
22.3	Refractory, Back	2155-222

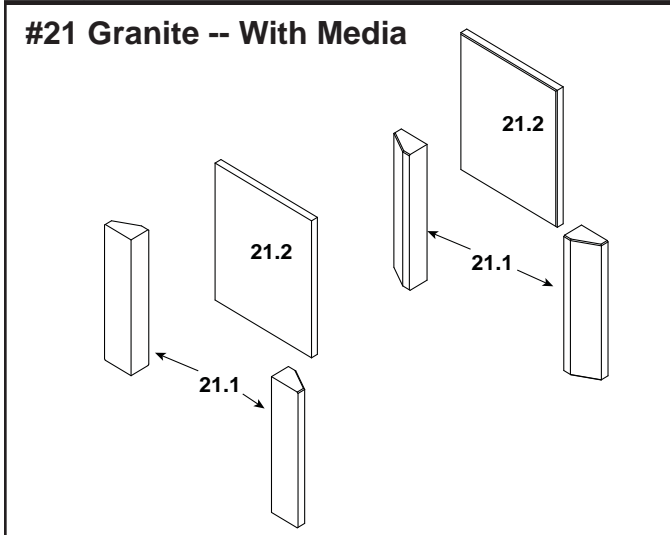
No one builds a better fire

Beginning Manufacturing Date: May 2009

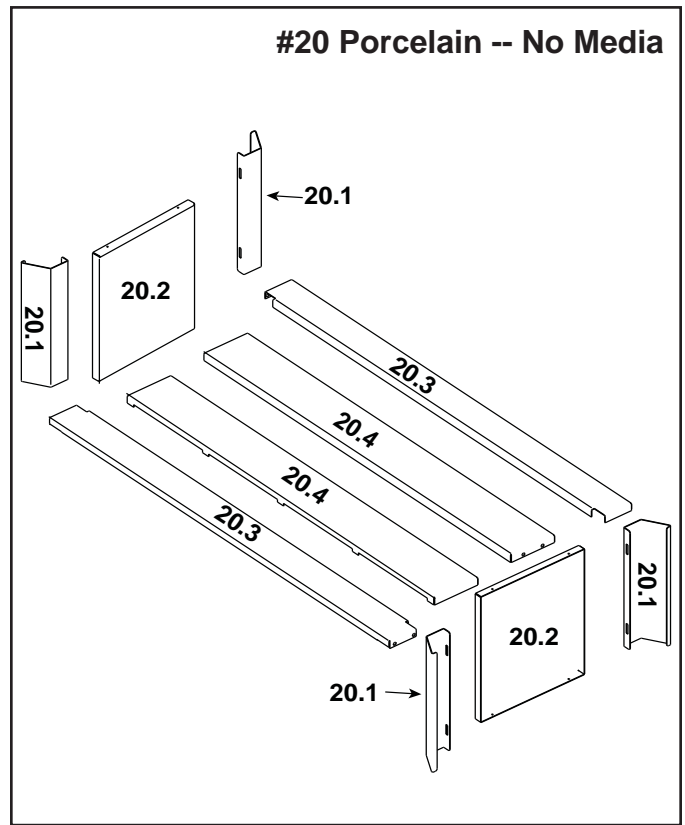
Ending Manufacturing Date: _____



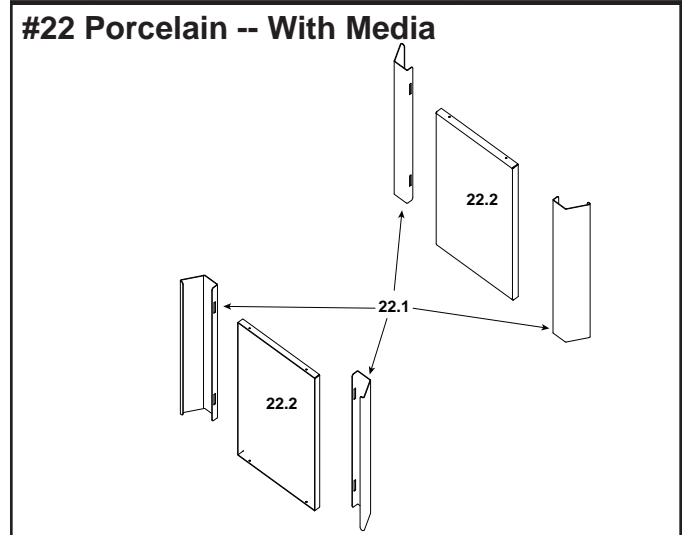
ITEM	DESCRIPTION	PART NUMBER
19	Refractory Kit	GR40ST-F
19.1	Refractory, Corner (Qty 4 req)	2155-235
19.2	Refractory Side (Qty 2 req)	2175-224
19.3	Refractory, Inner (Qty 6 req)	2155-215
19.4	Refractory, Outer (Qty 2 req)	2155-217



ITEM	DESCRIPTION	PART NUMBER
21	Refractory Kit	GR40ST-L
21.1	Refractory, Corner (Qty 4 req)	2175-225
21.2	Refractory, Side (Qty 2 req)	2175-224



ITEM	DESCRIPTION	PART NUMBER
20	Refractory Kit	POR40ST-F
20.1	Refractory, Corner (Qty 4 req)	2155-230
20.2	Refractory, Side (Qty 2 req)	2175-223
20.3	Refractory, Outer Bttm (Qty 2 req)	2155-226
20.4	Refractory, Inner Front (Qty 2 req)	2155-224



ITEM	DESCRIPTION	PART NUMBER
22	Refractory Kit	POR40ST-L
22.1	Refractory, Corner (Qty 4 req)	2155-219
22.2	Refractory, Side (Qty 2 req)	2155-223

D. Contact Information



No one builds a better fire

Heat & Glo, a brand of Hearth & Home Technologies Inc.
7571 215th St, Lakeville, MN 55044
www.heatnglo.com

Please contact your Heat & Glo dealer with any questions or concerns.
For the location of your nearest Heat & Glo dealer,
please visit www.heatnglo.com.

- NOTES -

NOTICE



- Important operating and maintenance instructions included.

DO NOT DISCARD THIS MANUAL

- Read, understand and follow these instructions for safe installation and operation.

- Leave this manual with party responsible for use and operation.



This product may be covered by one or more of the following patents: (United States) 5328356, 5601073, 5613487, 5647340, 5890485, 5941237, 5947112, 5996575, 6006743, 6019099, 6053165, 6145502, 6170481, 6374822, 6484712, 6601579, 6769426, 6863064, 7077122, 7098269, 7258116, 7470729 or other U.S. and foreign patents pending.

2000-945

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